THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[REGISTERED AS A NEWSPAPER.]

VOL. XXVI. No. 642.] LONDON, AUGUST 31, 1875. [27TH YEAR.] Price 6d.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis—10,000 cubic feet of gas per ton of coal; 26-candle gas; 13¼ cwt. coke per ton of coal.
The London Exhibition in 1851 was lighted with gas made from Ramsay's Cannel.
RAMSAY'S PATENT CONDENSED COKE.
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GAS-RETORTS, introduced 1828. FIRE-BRICK WORKS, established 1804. FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire-Clay. The Fire-Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article. The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the Works are the most extensive in the Kingdom.
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GENUINE TORBAY PAINT
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(Mixed ready for use).
These Paints are now used in 100 Country Gas-Works, and by all (but one) of the London Gas Companies, on Gasholders, Scrubbers, Purifiers, &c. They will cover tar effectually. Also used by the Admiralty, War Office, Railway Companies, Founders, &c.
They prevent and arrest rust, and protect iron from the action of water, sulphurous and gaseous exhalations.
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SCRUBBERS FITTED WITH MR. LIVESEY'S BOARDS AT MODERATE COST.
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Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS-RETORTS and other OBJECTS in FIRE-CLAY," and they were also awarded at the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS-RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
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Warranted to Measure correctly, and not to vary.
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INVENTORS AND PATENTEES

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FRICTIONLESS DRY GAS-METERS,

Beg to intimate to Gas Companies and others that they are now prepared to supply these very superior Meters at the same prices as for the ordinary Gas-Meters.

In the construction of this Meter, for which the best tin plates only are used, every mechanical contrivance has been taken advantage of successfully to reduce the friction to a minimum, which is amply proved by the fact that they are made to work upon only one-fortieth of an inch pressure. By an improvement also in their construction, a steadier light is obtained, and greater capacity than can be got from any other Meter in the market. No gas can pass under the valves on any back pressure, as is the case with many other Dry Meters.

To Gas Companies supplying gas through streets with heavy gradients, these Meters are invaluable, as much gas is saved from the low pressure required to work them.

ALL METERS ARE UPHELD FOR FIVE YEARS.

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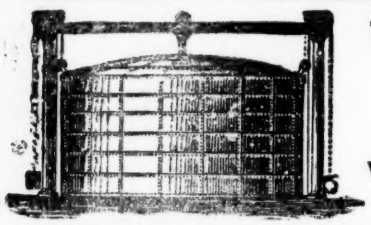

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Retorts, Retort-Fittings, Condensers, Scrubbers, Purifiers, Station-Meters, Governors, Rack and Screw Valves. Gas and Water Mains always in Stock.

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Combining most recent improvements in principle and manufacture; upwards of 200,000 already in work, giving highest satisfaction.
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And all kinds of Experimental Gas Apparatus.

1862.

PATENT ANTIMONY PAINT.

MADE ONLY BY

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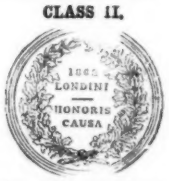

This Paint having been in general use over thirteen years (especially in some of the principal Gas-Works), and proved itself the best light-coloured Paint produced to resisting the influence of vitiated atmospheres, it is important that its qualities should be more widely known.

It is not discoloured like white lead in a sulphuretted atmosphere, nor washed off like white zinc; and its light colour reflecting heat, produces much less expansion of gas in holders painted with it than with dark colours, besides rendering them much more sightly. Its specific gravity is so much below white lead that the same weight will cover one-third more surface, while it is equal in body; and its price being about the same (30s. per cwt.), it is actually one-third cheaper. From experience, its manufacture is greatly improved, and it is quite suitable for all purposes in which white lead is employed.

The following Gas Companies in London have used the Paint for years—viz., The Gaslight and Coke, Imperial, Independent, City of London, Commercial, London, and Surrey Consumers.

N.B.—Antimony Paint, COVERING SO MUCH MORE WORK, costs about 20s. per cwt., as compared with White Lead at 30s. per cwt.; a similar economy arises from its use in Steam and Gas Joints, for which purpose it is superior to White Lead.

SPECIAL DRIERS FOR ANTIMONY PAINT SUPPLIED.

ALDER AND MACKAY,

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MANUFACTURERS OF

CONSUMERS IMPROVED GAS-METERS;

IMPROVED DRY GAS-METERS, in Cast-Iron and Tin Cases,

OF THE HIGHEST EXCELLENCE,

Warranted to measure correctly, and not to vary.

STATION METERS AND GOVERNORS,

EXPERIMENTAL METERS, PHOTOMETERS, GASHOLDERS, &c.

Established

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THE ORIGINAL

WORTLEY FIRE-BRICK WORKS,

NEAR LEEDS,

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FIRE GOODS, and Salt-Glazed Drain-Pipes.

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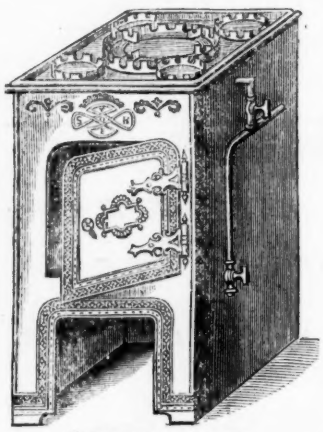
LIVERPOOL—1, Back Leeds Street,

Where is always kept a Stock of Retorts, Fire-Bricks, Terra Cotta Ware, and Drain-Pipes.



"SOYER"—No. 75.
15 in. wide, 27 in. high, with Dripping Pan, Gridiron, and Terra Cotta Radiator. Price £2 10s.

No. 77.
18 in. wide, 36 in. high.
Hot Plate, 24 in. by 21 in. Price £5.

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(LATE SCOTT AND BUTLER,)

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MANUFACTURERS OF EVERY DESCRIPTION OF

GAS APPARATUS

FOR CULINARY AND DOMESTIC USE.

FOR EXCELLENCE OF DESIGN AND FINISH, COMBINED WITH GENERAL UTILITY AND EFFICIENCY, OUR GOODS ARE UNRIVALLED.

THE NEW REGISTERED "PARAGON" BOILING-STOVE

(From 2s. 3d. to 10s.)

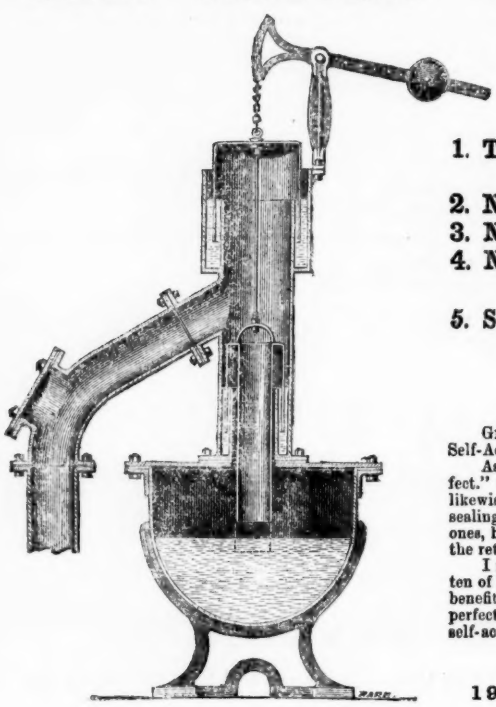
IS THE MOST PERFECT ARTICLE OF THE KIND YET INTRODUCED.

PRICES AND TERMS ON APPLICATION.

SELF-ACTING REMOVABLE DIP-PIPE,

PATENTED BY

CHANDLER & STEVENSON.



ADVANTAGES.

1. There is no pressure on the Retorts.
2. No deposit of Carbon.
3. No scurfing is required.
4. Never a choked Ascension-Pipe.
5. Saves Fuel and Wear and Tear.
6. Gets 10 per cent. more Gas out of the Coal, and a higher Illuminating Power.
7. Is never out of order.
8. Requires no attention.
9. Is perfectly automatic in its action.

TESTIMONIAL.

Metropolitan District Asylum, Caterham, Surrey, Dec. 14, 1874.

MESSRS. CHANDLER AND STEVENSON.

GENTLEMEN,—I have much pleasure in bearing testimony to the complete working of your "Patent Self-Acting Dip-Pipes," which have now been in constant operation over three months.

As regards the action of the apparatus, I can describe it no better than by calling it "simply perfect." Immediately the retort is charged and the lid secured, the small holder rises, which lifts the Dip; likewise the instant the gas is permitted to escape at the mouthpiece the holder falls, thus perfectly sealing the Dip. I am fully convinced of the superiority of these Self-Acting Dips over Non Self-Acting ones, having experienced the fact that stokers do occasionally neglect to unseal the Dip after charging the retort, thereby causing a waste or loss.

I feel that it is quite unnecessary for me to say more on the subject, excepting that, having had ten of Messrs. Chandler's Dip-Pipes in use more than one year, and having experienced the great benefits derived thereby, inasmuch as the yield of gas from the coal is greatly increased, and the retorts perfectly free from carbon and other advantages, and seeing that the same Dip has been made perfectly self-acting by the second patent, I feel convinced that this is the right thing.—Yours obediently,

W. CRICKMAY, Resident Engineer.

For terms of use and cost, apply to Mr. G. W. STEVENSON,

19, GREAT GEORGE STREET, WESTMINSTER.

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GAS ENGINEERS,

WORKS: COMMERCIAL ROAD, EXETER,

INVITE THE ATTENTION OF GAS COMPANIES AND OTHERS FOR THE SUPPLY OF

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NEW GAS-WORKS erected complete. Plans and Estimates furnished. MAINS, METERS, SERVICES, LAMPS, &c., adapted for Towns of any size. Gas Companies advised on Improvements, Extensions, and Alterations of Works.

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They beg special attention to the excellence and superiority of their WET and DRY METERS, several thousand being now in use by many of the largest Gas Companies in the West of England and South Wales. Warranted to measure correctly, and not to vary. Their acknowledged superiority has brought them into general use more rapidly than any Meters hitherto manufactured. A guarantee of Five years tendered with each Meter.

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An extensive variety of Choice Designs in CHANDELIERS, PENDANTS, BRACKETS, STAR and SUN LIGHTS, MEDIÆVAL FITTINGS for CHURCHES, &c.

PATTERN-BOOKS and PRICE LISTS furnished.

☞ PLEASE NOTE THE ADDRESS—

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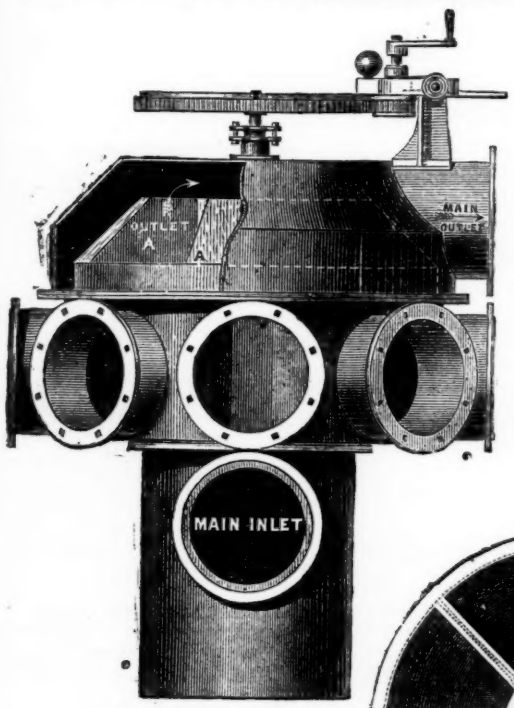
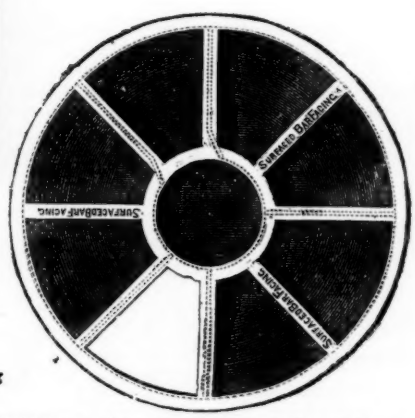
C. & W. WALKERS' PATENT CENTRE-VALVES.



Elevation of the Centre-Valve for four Purifiers. The safety cover is shown broken, to enable the Valve itself, which is inside, to be seen.

Plan of the Body, showing the Valve lying in it, with three of the facings, which were formerly exposed to settlements of dirt, carbon, naphthaline, &c., but which are now always covered by the surfaced bar-facings of the Valve. (See below.)



Plan of the Valve, or upper portion, showing the surfaced bar-facings referred to above.

These PATENT CENTRE-VALVES are the most perfect and certain means for working Purifiers. The Valve itself is protected from all injury inside the safety cover. The working of the Valve is so easy, and so governed by the stop-catch movement, that the Purifiers can be instantaneously changed in the dark as well as in daylight. They are scraped perfectly true, metal to metal, the facings heretofore exposed are always covered, and there is nothing more reliable, certain, and durable in a gas-works. By their use the floor of the Purifying-house is clear and level; the Valve and all connexions being beneath the floor, out of the way of working. A very considerable improvement and saving is effected in the cost of the connecting-pipes.

FOUR-WAY CENTRE-VALVES FORMING INLET, OUTLET, AND BYE-PASS.

MIDLAND IRON-WORKS, DONNINGTON, near NEWPORT, SHROPSHIRE; 8, FINSBURY CIRCUS, LONDON.

PATENT FUEL AND LIME FOR PURIFYING FROM FOUL LIME.

By a simple process the Foul Lime is converted into Fuel, by the combustion of which the lime is reproduced as a purifying agent.

Licences to work the invention will be granted to Gas Companies on very reasonable terms.

For further particulars apply to Mr. E. MADDOCKS, Manager of the Gas-Works, KETTERING.

The adoption of the above invention, without a licence from the Patentee, will be an infringement of the patent, and will subject the person or company guilty of such infringement to legal process.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of
CLAY RETORTS, FIRE-BRICKS, AND EVERY DESCRIPTION OF FIRE-CLAY GOODS

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MANUFACTURERS OF
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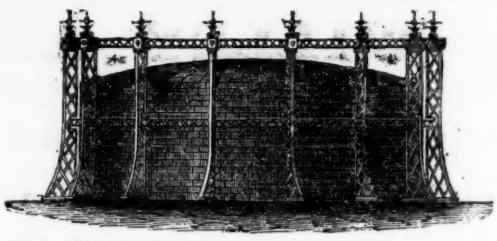
GASHOLDERS,
CAST & WROUGHT IRON GASHOLDER-TANKS,
CONDENSERS, SCRUBBERS, & PURIFIERS.
LONDON: 8, FINSBURY CIRCUS, E.C.



THE HORSELEY COMPANY,
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GAS ENGINEERS, IRONFOUNDERS, &c.,
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AND ALL REQUISITES FOR EITHER
GAS OR WATER WORKS;
ALSO
MAKERS OF ROOFS, BRIDGES, &c.

GAS PURIFICATION & CHEMICAL Co., LIMITED,
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Offices—PALMERSTON BUILDINGS, OLD BROAD STREET, LONDON, E.C.,
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The superiority of the material supplied by this Company is generally recognized, and it is now in use in nearly all the London and most of the large Provincial Gas-Works.

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ESTABLISHED OVER A QUARTER OF A CENTURY.
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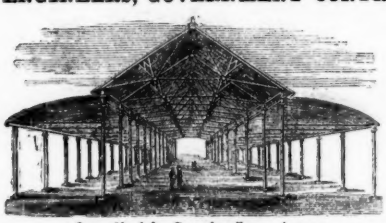
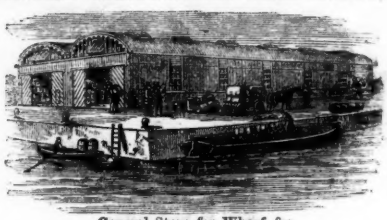
BUILDINGS, AND SHEDDING,
For which Estimates will be given on application,
ERECTED COMPLETE IN THIS COUNTRY
OR
PREPARED TO PLAN FOR ERECTION ABROAD,
EITHER WITH
TIMBER FRAMING or WHOLLY in IRON.



Open Shed for Covering Large Areas.



General Store for Wharf, &c.

GALVANIZED or PAINTED CORRUGATED IRON ROOFING PLATES and TILES. HEAVY CORRUGATED IRON PLATES for FIREPROOF FLOORS, ROADWAYS, PARAPETS, &c. WROUGHT-IRON TANKS, GUTTERING and CONSTRUCTIONAL WROUGHT IRONWORK.
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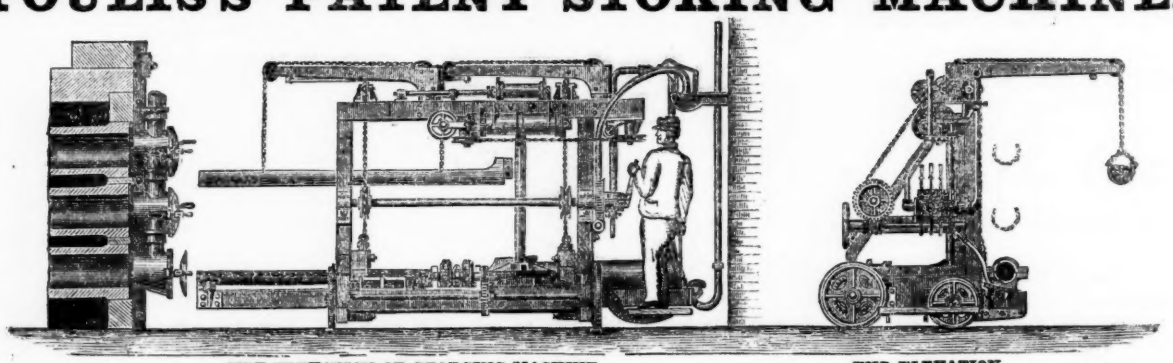
FOULIS'S PATENT STOKING MACHINE.



SIDE ELEVATION OF CHARGING MACHINE. END ELEVATION.
(*The Drawing Machine will be Illustrated in next week's Advertisement.*)
Makers: TANGYE BROTHERS and HOLMAN, London and Birmingham; ADAM WOODWARD and SON, Manchester; ROBERT LAIDLAW and SON, Glasgow; MASCHINENBAU-ACTIEN-GESELLSCHAFT HUMBOLDT, Kalk bei Deutz;
Or all particulars may be had from JAMES WOTHERSPOON, 31, St. Vincent Place, Glasgow.

TANGYE BROTHERS AND HOLMAN,

LAURENCE POUNTNEY LANE, LONDON, E.C.,

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH

HOLMAN'S NEW PATENT BRACKETED CROSS-BARS,

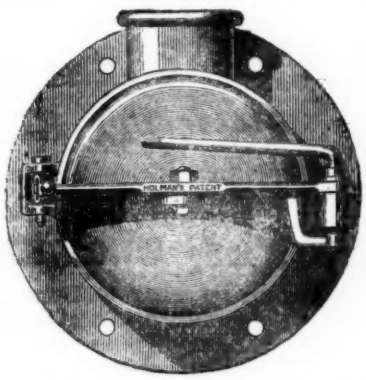
ANTI-FRICTION CATCHES, AND ECCENTRIC FASTENINGS.

NO LUTING.

NO DUPLICATE LIDS REQUIRED.

INSTANTANEOUS SEALING EFFECTED.

HOLMAN'S NEW SELF-SUSTAINING CROSS-BAR ENSURES FREEDOM OF JOINT AND MAINTAINS PARALLEL POSITION OF THE LIDS.



Since their introduction in 1869, these Patent Retort-Lids have been thoroughly tested (rigid cast iron is now successfully employed), nearly 15,000 being in use at various Gas-Works in London and the Provinces, among which may be mentioned:—

The Gaslight Co., Beckton (where, by the end of 1875, nearly 4000 will be in use).
" Gaslight Co., Bow Common.
" Gaslight Co., Silvertown.
" Gaslight Co., Lupus Street.
" London Gaslight Co.
" Independent do.
" Phœnix do.
" South Metropolitan Gaslight Co.
" Commercial do.
" Imperial do.
" West Ham Gas Co.
" Gas-Works, Barnet.

The Gas-Works, Royal Arsenal, [Woolwich.
" do. Lower Sydenham.
" do. Brentford.
" Consumers Gas Co., Woolwich.
" Alliance and Dublin Gas-Works.
" Edinburgh do.
" Manchester Corporation do.
" Salford do. do.
" Rochdale do. do.
" Liverpool Gas-Works.
" Birmingham do.
" Birkenhead do.
" Nottingham do.

The Newcastle-on-Tyne Gas-Works.
" Lurgan do.
" Carmarthen Gas-Works.
" Merthyr Tydfil do.
" Windsor do.
" Leeds do.
" St. Albans do.
" Over Darwen do.
" Rotherham do.
" Aylesbury do.
" Bournemouth do.
" Ystrad do.
" Cardiff do.
" Rochester do.

The Keighley Gas-Works.
" Aberdare do.
" Ballymena do.
" Richmond do.
" Stalybridge do.
" Longton do.
" Exeter do.
" Ross do.
" Falmouth do.
" Barrow-in-Furness do.
" Belfast do.
" Wakefield do.
And other Provincial and Foreign Gas-Works.

IMPORTANT TESTIMONIAL.

The Gaslight and Coke Company (Commonly called the Chartered Gas Company), Beckton, North Woolwich, July 2, 1874.

MESSRS. TANGYE BROTHERS AND HOLMAN.

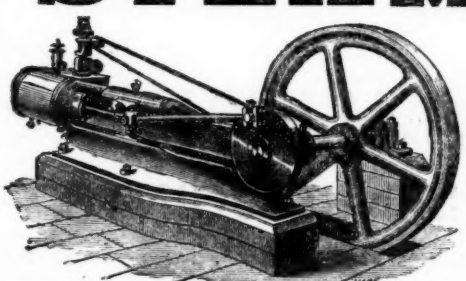
Gentlemen,—In answer to your inquiry respecting the Self-Sealing Lids, I beg to say that they continue to work well, and I have every reason to be satisfied with them.

I should be very sorry to return to the old system of Luting, and our stokers here freely acknowledge the benefit to them of the new system.

I am, yours truly,
(Signed) G. C. TREWBY.

TANGYE'S HORIZONTAL HIGH-PRESSURE EXPANSIVE

STEAM-ENGINES.



OVER 1500 SOLD SINCE THEIR INTRODUCTION IN DECEMBER, 1869.

In designing this Engine the utmost regard has been paid to simplicity of arrangement, strength of construction, and economy in cost. The working parts are considerably reduced in number, as compared with Horizontal Engines generally, rendering it far more durable and compact, the bed-plate, front cylinder cover, guides, and plummer-block for crank-shaft bearing being all cast in one piece, which in design and proportions is admitted by competent engineers to be perfect, and to afford a strength and rigidity that cannot possibly be attained in the best fitted engines of the ordinary horizontal type. The extraordinary stiffness of this Engine will permit of its being driven at a much greater maximum speed than engines generally, and with far less wear and tear. The cylinder with its valve-chest is bolted to the end of the bed. The cross-head slippers and connecting-rod ends are made adjustable, so that any wear can be readily taken up. The fly-wheel, cylinder-end, connecting-rod, and crank-plate, are all bright. All the parts are made to Whitworth's Gauges, and the material and workmanship are of the highest class throughout.

The Governor is of a very special description, and combines in the small space usually occupied by the ordinary steam stop-valve, a governor, throttle-valve, and stop-valve complete. It is exceedingly sensitive, simple, and compact.

These Engines are adopted in Gas-Works at Greenwich (Phœnix Gas Co.), Haggerston (Independent Gas Co.), Nine Elms (London Gas Co.), Falmouth, Harrow, Jersey, Plymouth, Richmond, Rochdale, Santiago (Chili), &c.

NUMBER NOMINAL HORSE POWER	B 2	C 3	D 4	E 6	G 8	H 10	J 14	K 18	M 25
Price of Engine, with Governor	£32	£38 15 0	£46	£70 0 0	£90	£115 0 0	£145	£185	£200
Feed-Pump, extra	3	3 15 0	4	5 10 0	6	7 10 0	8	10	15
Engine and Vertical Boiler on Base-Plate	75	95 0 0	110	150 0 0	180	225 0 0	280	—	—
Engine and Cornish Boiler, with Fittings	—	—	—	—	—	—	—	—	—
Variable Expansion Gear, extra	—	—	10	12 0 0	13	14 0 0	15	20	25

London 1851. New York, 1853. Paris, 1855. London, 1862.

Dublin, 1865.

The SIX MEDALS AWARDED to THOMAS GLOVER for

PATENT DRY GAS-METERS,

The latter being the Highest Medal awarded for Dry Gas-Meters by the Imperial Commissioners for the Universal Exhibition, Paris, 1867.

Paris, 1867.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON, E.C.

THOMAS GLOVER & CO.'S PATENT DRY GAS-METERS,

1st, Are a remedy for all the defects of Wet Meters;
2nd, Are suitable for all climates, whether hot or cold;
3rd, Incur no loss of Gas by evaporation;
4th, Cannot become fixed by frost, however severe;
5th, Are the most accurate and unvarying measurers of Gas;
6th, Prevent jumping or unexpected extinction of the Lights;
7th, May be fixed either above or below the level of the Lights;
8th, Cannot be tampered with, without visibly damaging the outer case;
9th, Will last much longer than Wet Meters;
10th, Will not cost more than one-half for repair that Wet or Water Meters do;
Are upheld for five years without charge.

WILLIAM PARKINSON & CO.,

(SUCCESSORS TO SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

MANUFACTURERS OF PATENT

WET & DRY GAS-METERS,

STATION-METERS WITH PLANED JOINTS,

GOVERNORS, PRESSURE REGISTERS, GAUGES,

AND EXPERIMENTAL APPARATUS,

STREET-LAMP METERS,

AND REGULATORS FOR AVERAGE METER INDICATION.

METERS FOR MEASURING WATER.

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TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

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THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, AUGUST 31, 1875.

Circular to Gas Companies.

THE abstract of the accounts of the metropolitan gas companies for 1874, which we publish to-day, again illustrates the wonderful progress which continues to be made in the gas industry of this metropolis. Nearly half a million was added to the capital accounts in the course of the year, the total sum now engaged in the business amounting to £10,616,493. The largest additions have, of course, been made by the Chartered and Imperial Companies for the works at Beckton and Bromley; but the Phœnix and South Metropolitan have expended considerable sums on capital account. On the other hand it will be noticed that in the cases of the Commercial and Ratcliff Companies the amount of capital per ton of coal carbonized has, by extension of business, been reduced.

It will be seen that the increase of consumption fully justifies this expenditure. The amount of coal carbonized in 1874 was, in round numbers, 1,445,000 tons, that is 20,000 tons more than were carbonized in 1873. The increase in the sale of gas at the same time amounted to 584,594,000 feet. Now, if this additional sale be divided by the extra coal carbonized, the latter would appear to have yielded an extraordinary amount of gas. The fact is, however, that the accounts of most of the companies show a considerable increase in the sale per ton of coal last year. This is most remarkable in the case of the Chartered Company, whose sale per ton last year exceeded by nearly 800 feet that of 1873. No one who watches the operations of this company in the streets will be surprised at this large increase. The Surrey Consumers also improved their sale to a like extent. A notable improvement is likewise to be observed in the case of the Phœnix Company, whose sale per ton in 1874, exceeded that of the previous year, by nearly 200 feet. All this is highly satisfactory, and creditable to all concerned.

The gas-rental of the metropolitan companies in 1874 amounted to close upon three millions of pounds, and the total income from all sources was £3,714,909. At the same time, the total expenditure on revenue account was £2,778,981, showing a gross profit of £935,927. The increase of rental above that of 1873—viz., £435,561—it must be admitted was somewhat abnormal, and was derived in great part from the high prices granted to the Chartered and Imperial Companies. With the normal advance in consumption during the present, the total rental will not probably exceed that of the past year.

The most valuable of our tables, which gives the expenditure and income, &c., per ton of coals, shows the advantages obtained by what we may call the high-priced companies. The Chartered, with 5s. for common gas and 6s. 3d. for cannel, necessarily heads the list with a rental of 46s. 3d. per ton. The Independent, with gas at 3s. 6d., and the South Metropolitan at 3s., naturally fall to the bottom. Perhaps the most striking fact in this table is the low value of "products" during the past year. In this column we include all residuals, but there is no doubt that the most serious diminution took place in the value of coke. We have a great fear that the present year will witness a still greater fall in the item of coke, and we have much doubt whether the high price of tar will be maintained. With the present uncertainty respecting guano, the value of ammoniacal liquor may possibly improve.

On examining the expenditure of the companies per ton, we find them, as regards coal, much on an equality. The Chartered, who have the highest cost for coal, carbonize, it must be remembered, a large proportion of cannel; while the South Metropolitan, whose coals appear to have been the cheapest, bought no cannel last year. The cost of purification naturally falls most heavily on the companies under the Acts of 1868-9; but we notice, in most cases, an advance under this head. In the case of the Imperial Company, the cost—12·63d. per ton—looks excessive, the more so because the actual results of the purifying processes are not altogether satisfactory; but a little further experience will, no doubt, help the company to reduce the expense, and improve the results. It is with no invidious purpose that we call attention to the fact that the cost of supervision, labour, and of "management" and directors fees, is considerably in favour of the larger companies. We alluded to this matter last week, and drew a moral from the fact, so we need not refer to it further to-day. We shall, by-and-by, have to discuss the advantages of amalgamation at length, and, for the present, may pass the matter over.

In fairness to the London Company, we must point out that the apparently excessive expenditure and loss, under the head of "Bad debts and extraordinary expenses," is due to the fact that we include in this sum the amount paid to the Chartered for cannel gas. The allocation of the sum is by no means appropriate, but it is difficult to find another place for it, and bring out the totals correct.

The column showing the gross profit per ton, indicates clearly which companies have paid maximum dividends out of the profits of the year. Only the Chartered, Imperial, London, and Ratcliff have done so; all the others have had to make a larger or smaller draw on an unappropriated balance or a reserve-fund.

We have, in former years, given in this place a table of the residuals per ton of coal, produced by the several companies. This year we add a column showing the quantity of gas made per ton, and thus our readers have a succinct view of the working of the different companies. Making due allowances, the results must be deemed satisfactory; but the small production of ammoniacal liquor in the cases of the Independent and Surrey Consumers, seems to indicate a deficiency of scrubbing apparatus, and suggests the presence of ammonia in the gas.

Table of the Residuals and Gas made per Ton of Coals Carbonized by the Metropolis Gas Companies in the Year 1874.

Name of Company.	Coke per Ton of Coals, in Bushels.	Breeze per Ton of Coals, in Bushels.	Tar per Ton of Coals, in Gallons.	Ammoniacal Liquor per Ton of Coals, in Gallons.	Gas Made, Feet per Ton
CHARTERED. . . .	31·29	3·13	10·51	27·04	9,906
COMMERCIAL . . .	32·89	3·92	9·28	18·92	9,917
IMPERIAL	36·00	4·68	8·59	20·27	9,427
INDEPENDENT . . .	36·00	1·99	9·78	13·02	9,728
LONDON	34·09	5·19	9·89	20·29	9,717
PHŒNIX	36·00	3·05	9·12	23·60	9,855
RATCLIFF	35·60	3·44	9·02	27·41	10,090
SOUTH METROPOLITAN	35·84	2·18	9·48	22·76	9,725
SURREY CONSUMERS .	33·49	2·51	11·16	10·61	9,980
MEAN	34·03	3·67	9·60	22·38	9,734

METROPOLIS GAS COMPANIES, 1874.

REVENUE ACCOUNT, *compared with that of* 1873, *showing the Increase or Decrease in each Item.*

	Chartered.		Commercial.		Imperial.		Independent.		London.		Phœnix.		Ratcliff.		South Metropolitan.		Surrey Consumers.	
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Total gas-rental	163310	..	7935	..	185328	..	9751	..	16265	..	38476	..	1685	..	9732	..	3079	..
Common gas	201893	..	7764	..	165020	..	9518	..	14431	..	49030	..	1677	..	9493	..	2763	..
Cannel gas	..	46904	..	..	..	..	..	..	806	..	..	..	..	..	..	..	..	..
Public lights, including lighting and contracts	10321	..	171	..	20307	..	233	..	1028	..	..	10554	8	..	239	..	316	..
Meter-rents	485	..	..	..	937	..	90	..	58	..	109	..	45	..	..	..	..	28
Old materials	..	468	..	896	..	1594	..	54	989	..	..	138	..	18	650	..	..	..
Products	..	51754	..	13937	..	81545	..	12099	..	23113	..	24279	..	3473	..	15089	..	11566
Miscellaneous	..	1244	..	29	11	..	..	789	..	250	..	361	..	83	..	965	..	253
Total income from all sources	110330	..	..	6927	103136	..	..	3099	..	6051	13808	..	..	1844	..	5672	..	8708
Total expenditure on revenue account	19436	..	..	12940	14052	..	..	1006	..	8722	14338	..	..	3673	..	6729	..	10986
Gross profit	90894	..	6013	..	89084	..	..	2093	2671	..	..	530	1829	..	1057	..	2218	..
Capital and borrowed money	200196	..	..	..	154290	..	1278	..	19678	..	30200	..	..	..	35776	..	647	..
Gross profit per cent. on capital	1·90	..	1·34	..	2·47	..	..	0·86	0·13	..	..	0·28	1·58	..	..	0·45	0·75	..
Gross profit per cent. on gas-rental	3·57	..	2·73	..	4·22	..	..	4·68	..	1·04	..	5·24	3·59	..	..	1·26	1·60	..

METROPOLIS GAS COMPANIES, 1874.

EXPENDITURE, *compared with that of* 1873, *showing the Increase or Decrease in each Item.*

	Chartered.		Commercial.		Imperial.		Independent.		London.		Phœnix.		Ratcliff.		South Metropolitan.		Surrey Consumers.	
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Coals, including carriage and dues	10569	..	1149	..	15579	..	..	522	..	4988	12723	..	..	501	..	8848	..	5171
Purifying materials	3743	..	463	..	7095	..	408	..	542	..	..	28	368	..	..	4	..	63
Supervision, labour, &c.	..	10182	..	1043	..	1914	..	1858	..	2552	..	1643	..	206	1355	..	..	293
Repair and maintenance of premises, tools, &c.	8927	..	..	5643	..	12865	..	108	..	4254	1051	..	..	3148	..	1025	..	1234
Rent, rates, and taxes	..	4274	25	..	1746	..	231	..	649	..	26	..	86	..	35	..	..	82
Salaries	..	192	..	..	..	1227	..	435	103	..	132	..	6	..	..	100	1	..
Collectors commission	1326	..	131	..	799	..	229	..	289	..	427	..	21	..	173	..	48	..
Stationery, printing, and general charges	186	..	213	..	..	1242	7	..	1180	..	..	2865	..	19	..	201	..	22
Directors	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..
Auditors	50	..	..	..	26	..	..	..	25	..	..	..	..	..	1	..	..	..
Distribution and repair of mains and services, &c.	7808	..	..	8902	1240	..	212	..	..	1915	778	..	4	..	1500	..	..	1934
Restoring and replacing meters	3693	..	178	..	1089	..	164	..	..	679	..	338	..	302	..	314	12	..
Law and parliamentary charges	..	4168	237	..	2955	..	..	13	73	..	521	..	..	..	40	..	..	235
Bad debts and extraordinary expenses	..	4375	..	141	..	882	370	..	1721	..	2618	..	..	41	..	157	..	2169

ABSTRACT OF DETAILS OF INCOME AND EXPENDITURE,

DETAILS OF INCOME, FOR THE YEAR 1874.

Name of Company.	Total Gas-Rental.	Common Gas.	Price per 1000 Cubic Feet.	Cannel Gas, at 4s. 7d. to 6s. 3d. per 1000 Cubic Feet.	Public Lights, including Lighting and Contracts.	Meter-Rents.	Old Materials.	Products.	Miscellaneous.
	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Chartered	1,091,506 6 6	797,313 2 1	5 0	220,427 16 0	73,765 8 5	10,660 0 0	6325 10 6	233,252 2 9	4,670 0 3
Commercial	165,405 11 5	149,458 10 5	4 0	..	15,947 1 0	None chgd.	382 3 11	43,712 18 2	161 17 0
Imperial	853,762 2 4	759,283 5 1	3/9 & 4/8	..	94,478 17 3	16,714 18 8	1652 3 11	184,566 0 3	1,773 11 0
Independent	91,308 12 9	85,023 4 10	3 6	..	6,285 7 11	2,683 17 6	310 9 8	34,095 7 1	281 6 6
London	230,993 1 5	195,018 12 1	3/9 & 4/6	13,987 0 7	21,987 8 9	3,841 8 9	1082 5 0	64,582 8 11	2,690 14 6
Phœnix	270,669 19 7	245,512 19 4	4/2 & 4/6	..	25,157 0 3	5,145 13 10	935 18 6	65,452 0 6	2,760 0 0
Ratcliff	36,846 4 11	33,051 17 7	3 9	..	3,794 7 4	286 6 0	57 13 6	12,144 18 7	302 18 4
South Metropolitan	115,440 0 11	101,984 3 11	3 0	..	13,455 17 0	None chgd.	807 15 10	47,567 12 1	299 15 6
Surrey Consumers	84,030 17 5	70,599 2 0	4 6	..	13,431 15 5	2,093 19 5	155 0 0	22,823 14 0	673 18 1
Total	2,939,962 17 3	2,437,244 17 4	..	234,414 16 7	268,303 3 4	41,426 4 2	11709 0 10	708,197 2 4	13,614 1 2

ABSTRACT OF DETAILS OF INCOME AND EXPENDITURE, SHOWING THE PROFIT REALIZED.

Name of Company.	Total Income from all Sources.	Total Expenditure on Revenue Account.	Gross Profit.	Capital and Borrowed Money.	Gross Profit per Cent. on the Capital and Borrowed Money.	Gross Profit per Cent. on Gas-Rental.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.		
Chartered	1,346,414 0 0	960,319 10 0	386,094 10 0	3,963,500 0 0	9·74	35·37
Commercial	209,662 10 6	174,136 19 3	35,525 11 3	450,000 0 0	7·89	21·47
Imperial	1,058,468 16 2	778,057 2 7	280,411 13 7	3,226,705 0 0	8·69	32·84
Independent	128,679 13 6	112,531 13 3	16,148 0 3	253,500 0 0	6·37	17·68
London	303,189 18 7	233,452 9 3	69,737 9 4	875,372 15 0	7·96	30·19
Phœnix	344,963 12 5	262,930 9 5	82,033 3 0	1,057,000 0 0	7·76	30·31
Ratcliff	49,638 1 4	37,263 5 11	12,374 15 5	115,670 0 0	10·69	33·58
South Metropolitan	164,115 4 4	135,810 1 11	28,305 2 5	384,751 0 0	7·35	24·51
Surrey Consumers	109,777 8 11	84,479 17 8	25,297 11 3	289,995 0 0	8·72	30·10
Total	3,714,909 5 9	2,778,981 9 3	935,927 16 6	10,616,493 15 0	8·35	28·45
					Average.	

DETAILS OF EXPENDITURE ON REVENUE ACCOUNT, FOR THE YEAR 1874.

Name of Company.	Coals, including Carriage and Dues.	Purifying Materials.	Supervision and Labour in Manufacture.	Ordinary Repair and Maintenance of Premises, Tools, and other Implements.	Rents, Rates, and Taxes.	Salaries, Management.	Collectors Commission.	Stationery, Printing, and General Charges.	Directors.	Auditors.	Expense of Distribution & Ordinary Repairs of Mains and Services, Lighting & Repairing Lamps.	Restoring and Replacing Meters.	Law and Parliamentary Charges.	Bad Debts and Extraordinary Expenses.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Chartered	607,760 9 0	18,166 1 0	83,544 8 0	85,591 4 8	28,442 11 9	4,730 8 4	13,100 17 10	4,830 5 6	5,000 0 0	550 0 0	53,499 8 4	24,295 12 4	5,106 5 7	19,376 7 2
Commercial	112,995 4 8	2,035 8 4	17,842 14 7	19,127 3 11	3,783 8 4	1,523 8 0	1,653 15 9	1,685 9 6	1,500 0 0	150 0 0	7,935 2 8	1,764 14 10	393 10 0	1,364 14 9
Imperial	515,107 12 1	22,299 10 1	68,093 4 8	65,921 1 0	18,896 1 5	7,185 10 0	10,640 3 5	5,660 4 9	4,000 0 0	210 0 0	37,422 15 6	12,243 10 11	3,850 7 11	4,874 16 11
Independent	76,698 0 2	760 11 0	11,238 17 1	8,213 11 10	2,522 9 2	930 0 0	1,637 4 7	755 12 0	1,700 0 0	100 0 0	5,455 12 11	1,291 10 4	..	918 14 6
London	138,844 17 1	3,050 6 0	22,958 7 10	19,415 17 2	8,282 17 10	1,866 9 4	3,109 19 2	3,678 5 6	1,800 0 0	150 0 0	9,292 6 8	3,138 14 10	245 11 2	16,536 12 1*
Phœnix	163,442 7 0	2,637 3 10	20,550 8 2	32,449 8 2	9,427 14 7	2,558 15 3	3,833 15 6	546 9 9	2,000 0 0	100 0 0	15,588 0 8	3,860 0 7	532 13 0	4,467 14 5
Ratcliff	23,051 15 6	547 13 7	4,456 7 9	2,557 17 11	1,318 10 6	778 12 6	369 18 0	282 12 5	800 0 0	31 10 0	2,377 5 8	280 13 6	..	352 15 1
South Metropolitan	86,011 16 4	2,126 5 5	18,616 9 10	4,928 14 3	4,467 13 4	1,400 0 0	1,770 6 8	1,253 5 7	1,190 0 0	99 3 4	10,356 6 2	1,680 2 1	40 7 10	1,061 15 3
Surrey Consumers	49,795 12 6	684 15 6	8,805 12 4	10,716 2 7	2,886 5 8	999 8 0	937 19 11	776 4 11	1,500 0 0	84 0 0	5,714 0 2	516 12 10	37 15 2	870 8 1
Total	1,773,707 14 4	52,307 14 9	256,106 10 3	248,921 1 6	80,027 12 7	21,972 11 5	37,054 0 10	19,468 9 11	19,490 0 0	1,474 13 4	147,640 18 4	49,071 12 3	10,206 10 8	49,823 18 3

* This item includes the sum of £13,922 13s. 8d. paid to the Chartered Company for cannel gas supplied in bulk.

TABLE *showing the Income, Expenditure, Profit, and Capital of the Metropolis Gas Companies per Ton of Coal carbonized in* 1874.

Name of Company.	INCOME. Total Gas-Rental.	Meter-Rents.	Old Materials.	Products.	Miscellaneous	Total Income from all Sources.	EXPENDITURE. Coals, including Carriage and Dues.	Purifying Materials.	Supervision and Labour in the Manufacture of Gas.	Ord. Repair & maintenance of Premises, Tools, & other Implements.	Rents, Rates, and Taxes.	Salaries, Management.	Collectors Commission.	Stationery, Printing, and Gen. Charges.	Directors.	Auditors.	Expense of Distribution & Ordinary Repairs of Mains and Services, Lighting & Repairing Lamps.	Restoring and Replacing Meters.	Law and Parliamentary Charges.	Bad Debts, and Extraordinary Expenses.	Total Expenditure on Revenue Account.	PROFIT. Gross Profit per Ton of Coal carbonized.	CAPITAL. Capital and Borrowed Money per Ton of Coal carbonized.
	s. d.	d.	d.	s. d.	d.	s. d.	s. d.	d.	s. d.	s. d.	s. d.	d.	d.	d.	d.	d.	s. d.	d.	d.	s. d.	s. d.	s. d.	£ s. d.
Chartered	46 3·69	5·42	3·22	9 10·74	2·37	57 1·46	25 9·41	9·25	3 6·53	3 7·58	1 2·48	2·41	6·67	2·46	2·55	0·28	2 3·24	12·37	2·59	0 9·86	40 8·90	16 4·56	8 8 1·83
Commercial	35 4·44	..	0·98	9 4·17	0·41	44 10·01	24 1·96	5·22	3 9·79	4 1·08	0 9·71	3·91	4·24	4·33	3·85	0·38	1 8·36	4·53	1·01	0 3·50	37 2·85	7 7·16	4 16 2·74
Imperial	40 3·47	9·46	0·93	8 8·51	1·00	49 11·39	24 3·70	12·63	3 2·56	3 1·33	0 10·70	4·07	6·03	3·20	2·26	0·12	1 9·19	6·93	2·18	0 2·76	36 8·62	13 2·77	7 12 3·23
Independent	31 3·82	11·04	1·27	11 8·33	1·15	44 1·64	26 8·69	3·13	3 10·26	2 9·81	0 10·38	3·83	6·74	3·11	7·00	0·41	1 10·46	5·82	..	0 3·78	38 7·18	5 6·46	4 6 11·40
London	41 10·14	8·35	2·35	11 8·39	5·84	54 11·09	25 1·83	6·63	4 1·91	3 6·21	1 6·01	4·06	6·76	8·00	3·91	0·33	1 8·20	6·82	0·53	2 11·95	42 3·49	12 7·60	7 18 6·93
Phœnix	38 8·24	8·82	1·60	9 4·26	4·73	49 3·66	23 4·33	4·52	2 11·25	4 7·66	1 4·16	4·39	6·57	0·94	3·43	0·17	2 2·74	6·62	0·91	0 7·66	37 6·97	11 8·69	7 11 0·91
Ratcliff	35 9·38	3·33	0·67	11 9·52	3·53	48 2·44	22 4·63	6·38	4 3·93	2 5·81	1 3·80	9·07	4·31	3·29	9·32	0·37	2 3·70	3·27	..	0 4·11	36 2·24	12 0·20	5 12 3·93
South Metropolitan	27 6·71	..	2·31	11 4·27	0·85	39 2·15	20 6·41	6·09	4 5·83	1 2·12	1 0·80	4·01	5·07	3·59	3·41	0·28	2 5·67	4·81	0·12	0 3·04	32 5·06	6 9·09	4 11 10·22
Surrey Consumers	38 10·42	11·62	0·86	10 6·68	3·74	50 9·33	23 0·40	3·80	4 0·88	4 11·48	1 4·02	5·55	5·21	4·31	8·33	0·47	2 7·72	2·84	0·21	0 4·83	39 0·92	11 8·41	6 14 1·66
Mean per Ton	40 8·29	6·88	1·94	9 9·62	2·26	51 5·01	24 6·60	8·69	3 6·54	3 5·34	1 1·29	3·65	6·15	3·23	3·24	0·25	2 0·52	8·15	1·69	0 8·27	38 5·56	12 11·45	7 6 11·29

We are glad to mention that the Phœnix Company have announced that they will reduce the price of gas to 3s. 9d. per 1000, from Michaelmas-day next.

We devote considerable space to-day, but not more than the importance of the trial demands, to a report of the action brought against the Liverpool United Gas Company for negligence, which, it is alleged, caused the destruction by fire of the landing-stage in the Mersey. It is the most serious civil action in which a gas company has ever been engaged. Our Wood Street and Savile House fires sink into insignificance when, as in this case, the nominal damages are laid at £200,000. The result has so far been disastrous for the gas company; but we must candidly confess that with the admissions of the man Ledson before them, we do not see how the jury could arrive at any other conclusion than that they adopted. This poor fellow, it seems clear, completely lost his wits on the occasion. In view, however, of the possibility of another trial, it may not be safe or advisable to comment on the evidence. The result, as it stands at present, is that the gas company are convicted of negligence, and that the damages are to be assessed by some eminent engineer, to be appointed as arbitrator; but the learned judge who tried the case admitted that there were grounds for a motion for a new trial.

Great interest is naturally felt in Liverpool on the question as to how the damages are to be paid, supposing the verdict to remain undisturbed. There is, of course, but one source from which the money can come, and that is the profits of the company. That the shareholders will have to submit to reduced dividends, must be considered as inevitable; and that consumers must not expect a reduction in the price of gas, for some time to come, is equally clear. Thus, as Baron Huddleston put it, the loss will ultimately be divided in "minute proportions." The gas company, unfortunately, have many enemies, and but little sympathy with them is shown in Liverpool. It is now made a charge against them, that they undertake the business of fitters, which, it is said, does not properly belong to them. We have always contended that gas companies should act as fitters, and the occurrence of this accident does not alter our opinion. We may draw a moral from this sad affair, however, and it is, that when work of importance is to be done, there should be an abundance of labour.

The half-yearly meetings of gas companies throughout the country are now taking place, and we are happy to see that the general results of the past half year's working are turning ut satisfactorily. The Brighton Company have to submit to a slightly reduced dividend, but the reduction is unimportant. The Eastbourne Company pay full dividends on their 7 per cent. capital, and 9½ per cent. on the original shares, entitled to 10 per cent. The business is rapidly extending, and the company are in a highly prosperous state.

We are happy to be able to congratulate the Barnet Gas and Water Company on the steady progress they are making towards prosperity. The dividends are not yet large, and may not be for years to come; but, with a growing district to supply, and so ably managed, the undertakings must eventually prove fairly remunerative.

A meeting of the shareholders of the Birmingham Gaslight and Coke Company has been called, to decide on the division of he purchase-money to be paid by the Corporation to-morrow. This, it will be remembered, is a lump sum of £450,000, and it is proposed to divide it between the holders of different classes of shares as follows:—For each new ordinary share of £40, fully paid, £57; for each A share of £80, £130; and for each B share of £8 nominal value, one-tenth of £130. This appears to be an average premium of nearly 50 per cent. on each class of shares.

Great complaints, we see, are made of the quality of the gas supplied by the Corporation of Salford. We have no pleasure in recording the fact, but when gas companies are so unmercifully abused, we feel bound to point out that Corporation gas does not uniformly give satisfaction to consumers.

The coal question is of too much importance to gas companies to allow us to pass a paper on this subject by Mr. Stanley Jevons. The author is an alarmist, and predicts the failure of our coal supply at an earlier date than that fixed upon by Sir W. Armstrong. He considers that the recent famine was the first fringe of the scarcity which must come sooner or later. As regards the cause of the famine, he expresses an opinion that it arose chiefly from increased demand, and he goes on to express a confident belief that coal will never again be so cheap in this country as it was from 1864 to 1871. This is an opinion we have all along expressed. As soon as trade revives, the demand for coal will again increase, with the certain consequence of higher prices. These considerations ought not to be neglected by gas companies when they are making arrangements, the operation of which will extend over considerable periods of time.

Water and Sanitary Notes.

Mr. Deacon, the water engineer of the Liverpool Corporation, has prepared an elaborate report on the public wells, as a source of supply for Liverpool, which clearly shows that the additional wells suggested cannot be depended upon to furnish the quantity of water which will be required. The yield of the present wells, it is said, diminishes at the rate of 2 per cent. per annum. It is quite true that a much larger quantity of water is now pumped than was brought up in 1850; but, adds Mr. Deacon, "in relation to the dimensions of the present works, and the expenditure of fuel in pumping, the quantity is less." Some interesting facts are stated, which would be curious, only that they represent the common experience wherever a number of wells have been sunk into the same stratum. For example: "In September, 1866, an additional well having been sunk at Bootle, the yield of that station was increased from 621,660 to 1,462,000 gallons per day; but, in consequence of this increase, the level of the water in Green Lane well, 3½ miles distant, fell 4 feet, while the former rate of yield—viz., 2,956,000 gallons per day—could not be quite maintained." Other illustrations of the same kind are given, all of which lead to the conclusion that the water in the public wells is regularly sinking to a lower level, or that, if it be maintained at a constant level, the water capable of being pumped is a constantly diminishing quantity. Mr. Deacon correctly accounts for the reduced yield by ascribing it to the diversion of a portion of the rainfall from the wells. This is effected by extended agricultural drainage, which carries the surface water at once to the natural watercourses, to the constantly increasing area built over, and to the increasing area of paved streets, which cause the rainfall to be carried by the sewers to the sea. There is, besides, what we may call the competition of private wells in Liverpool, all sunk into the same stratum, and depending on the same drainage area. From all this, it would seem clear that the Corporation of Liverpool must look farther afield for their additional supply, and presently we shall have more discussions on the large schemes propounded.

A report in another column shows that, at an ordinary meeting of the Rochester Water-Works Company, a dividend of 6 per cent. was declared. At an extraordinary meeting, it was resolved to issue new capital at a premium of £1 per share. The legal right of existing shareholders to new issues at par, if they choose to take them, is indisputable. We must commend the self-sacrificing spirit of the Rochester shareholders, which induces them to accept shares at a premium. On second thoughts, however, no great self-denial may have been exhibited. The premiums are to be carried to a contingency-fund, and so may prevent a reduction of dividend, if there should be a break-down of the machinery.

The South Staffordshire Water-Works Company have also declared a dividend of 6 per cent., and have decided to raise new shares for the execution of works for which they have recently obtained parliamentary sanction. We hope these works will be pushed on as rapidly as possible, and that the supply of this large district will soon be adequate and satisfactory. We notice that the company have recently proceeded against some women and children at Walsall, for stealing water. The excuse of the defendants was, that they often gave water from their wells to the company's customers, when their supply was suspended; and they considered that, by taking the company's water, they were only getting back what they had given. As regards the new capital, it is to be allotted as usual; the directors having power to dispose, as they may think fit, of such shares as are not taken up by existing holders.

Proposed Purchase of the Walsall Undertaking of the Birmingham and Staffordshire Gas Company.—At a special meeting of the Walsall Town Council, on Monday, the 23rd inst., it was agreed that all necessary proceedings be taken under the Municipal Corporations (Borough Funds) Act, for calling and holding the requisite meetings of the council, and of the owners and ratepayers of the borough, to approve or otherwise of the promotion of a bill in Parliament for the purchase of the Birmingham and Staffordshire Gaslight Company's land and works within the borough and foreign of Walsall, and for other purposes.

Ruabon Water-Works Company.—At the half-yearly meeting, held on Wednesday last, the following report of the directors was presented and adopted:—"From the half-yearly statement of accounts, made up to June 30 last, it will be seen that the expenditure on capital account exceeds the receipts by £973 5s. 7d. To meet this balance, it will be remembered that your sanction was given, at the extraordinary meeting held on March 31 last, to borrow a further sum on mortgage of the works, but up to the present time your directors have not found it necessary to do so. The total revenue for the half year amounts to £723 8s.; after deducting the working expenses (£201 3s. of this amount having been expended on repairs to reservoirs), £522 19s. 9d., leaves a net profit for the half year of £200 8s. 3d., which, added to the balance of profit and loss account, after paying the dividend on March 30 last, £69 10s., makes the total amount available for dividend £269 18s. 3d. Your directors recommend the payment of a dividend at the rate of 4 per cent. per annum, which will amount to £238, and carry the balance, £31 18s. 3d., to the credit of the next account. Your directors are glad to report that the works are most substantial, and in every way satisfactory. The applications for domestic supply continue to increase."

Correspondence.

PREPARATION OF LIME FOR PURIFICATION.

SIR,—I have just read, with much interest, Mr. Cleland's paper on "Economy of Force in Gas-Works," published in your report of the proceedings of the British Association of Gas Managers, at their June meeting. It so happened that I also read a paper on the "Proper Preparation of Lime for Use in the Purification of Coal Gas," at the May meeting of the American Gaslight Association (a copy of which I enclose), the main object of which was to bring to the notice of the gas fraternity the advantage of screening the slaked lime intended for the purifiers, in order to break it up into granules or small lumps, thereby reducing the resistance to the passage of gas, and using sufficient water to prevent the lime from becoming dusty or powdery. The following quotation from Mr. Cleland's paper shows that he has been led to the same conclusion. He proposes "that we take the moist hydrate of lime as usually prepared, separate the nodules of the size we want, by a suitable screen or bolting machine, return the loose material to the unscreened mass, with the addition of water if necessary, and screen again, so bringing all the lime into the nodular condition."

I am very happy to find my experience confirmed by Mr. Cleland, and to be able to assure him that not only is the resistance in the purifiers reduced to a minimum by the granular or nodular preparation of the lime, but that its purifying power, or duty, per bushel is at the same time considerably increased, *provided it be made wet enough*. This fact is, I think, fully demonstrated in the enclosed paper, by the results of three years' use of granular lime in the New Orleans Gas-Works.

New Orleans Gaslight Company,
Aug. 2, 1875. THEOBALD FORSTALL.

[The paper above referred to will shortly be published in our report of the proceedings at the meeting of the American Gaslight Association. ED. J. G. L.]

COST AND DANGERS OF SUBWAYS.

SIR,—With reference to your remarks on the effect of the "silly season" on the writer in *The Times*, permit me to draw your attention to the following portion of my "Defence of Local Self-Government," which appeared in a *practical* contemporary in March last:—

"Now with respect to the vexed question of frequent openings of the roads for various purposes, I assert that, however annoying the practice is (and it is not nearly so annoying and troublesome to any one as to the custodians of the roads), it is unavoidable for the most part, if people desire that gas and water shall be conveyed into their houses through pipes. I know that the first thought in opposition to this view is that 'subways' ought to be constructed. Well, we must immediately face the question of a ruinous cost in reconstructing our system of supply; but it would be well also to consider what would be the result. There is no power to compel the companies to use the subways, and, well advised as they are by their engineers, the companies refuse to use them, and prefer to avail themselves of the power that Parliament confers on them by the same Acts under which the vestries are constituted, to open the ground as may be required. Possibly the companies and Parliament foresee what mere theorists shut their eyes to—viz., the fouling of water by escapes of gas, and also the dangerous explosions that might occur. Notwithstanding the welcome pressure of the soil, and the paving and concrete on pipes, I have seen hundreds of yards of ground blown up through defective joints or metal in water-pipes; and I have also had experience of the terrific effects of small leakages of gas into sewers and gullies—I use the plural advisedly; and assuredly, in most points of risk, what is possible will at some time become actual; and in these matters but a little neglect on the part of any one, down to the meanest workman on a job, may suffice, with the aid of a subway, to accomplish such dire mischief as would not be compensated for by the indulgence of the expensive fancies of those who will not try their hand in using the machinery they now abuse."

A PAROCHIAL OFFICER.

Parliamentary Intelligence.

HOUSE OF LORDS COMMITTEE.

WEDNESDAY, JULY 21.

(*Before Lord* STRAFFORD, *Chairman; Earl* CAMPERDOWN, *Viscount* FALMOUTH, *Viscount* HUTCHINSON, *and Lord* HATHERTON.)

COMMERCIAL GAS BILL.

Mr. VENABLES, Q.C., Mr. POPE, Q.C., and Mr. MICHAEL appeared for the promoters; Serjeant SARGOOD, Mr. SAUNDERS, and Mr. BURKE appeared for the Imperial and Phœnix Gas Companies, for consumers of gas within the district supplied by the Commercial Gas Company, and for consumers of gas and others, petitioners against the bill. Mr. PEMBROKE STEPHENS appeared for the Ratcliff Gaslight and Coke Company, and Mr. PHILBRICK, Q.C., and Mr. O'HARA for the Metropolitan Board of Works, who both petitioned against alterations in the bill.

Mr. VENABLES, in opening the case for the promoters, necessarily traversed much of the ground over which he went in explaining the position of the companies, and the proposals of the bill, in the committee of the House of Commons, and which need not be here repeated. He said the bill was of some importance, and he hoped, when their lordships had heard the evidence, it would be found that there was virtually no opposition; but of this he was not certain until the committee had given their decision on certain points. The Commercial Company sought for powers to acquire land for new works on the river Lea, to add £560,000 to their capital, and to amalgamate with the Ratcliff Company. Both the companies had been successful in their operations, and had what was a good sign—a low amount of capital in proportion to the amount of their manufacture. The Chartered Gas Company, who were not opposing in this House, but who appeared against the bill in the House of Commons, had at present 19s. or 20s. of capital to every 1000 feet of gas sold, whereas the Commercial had only 10s. 11d., and the Ratcliff 11s. 10d. to every 1000 feet. The Metropolitan Board of Works, who were the proper representatives of the consumers, and who watched the case minutely in the House of Commons, had lodged a petition against alterations, or, in other words, they were active supporters of the bill. The various district boards which the proposed scheme would affect met together in February last and agreed not to oppose, on the companies complying with certain conditions. The promoters had complied with the conditions named; therefore there was no opposition from these bodies, nor, in fact, was there any opposition in the public interest. The learned counsel then gave the committee a statement of the course of general gas legislation for London from 1847 to the present year, when the House of Commons passed the bill of the Metropolitan Board of Works and the Corporation of the City of London; and in glancing at the proceedings in the House of Commons, during 20 days consideration of that bill, he pointed out that the select committee had refused the prayer of the petitioners, from the general knowledge of the subject they had obtained in that way. The petitions now before the committee were as weak as the case of the promoters was strong, and he hoped, when he had called their attention to them, the committee would come to the conclusion that the bill was unopposed, and that none of the petitions were, or at least only one was, entitled to a *locus standi*. The Chartered Company, who were the chief opponents in the House of Commons, had now given up their opposition, but the Imperial Company had copied a clause from the petition of the Chartered Company, and wished to compel the Commercial Company to take gas in bulk from them; and they also, in effect, complained that the promoters proposed to supply gas to their consumers at too cheap a rate. The latter contention was, on the face of it, unworthy of serious consideration; and as to the former, the Imperial Company had no power to supply gas in bulk to other companies; in fact, they had had a bill in Parliament earlier in this session for the extension of their works for the better supply of gas, not to any other company, but to their own consumers. The petition of the "three" consumers—which had been supported by 22 persons at one time, but 19 had since withdrawn—could not be considered as having weight, in view of the fact that the two companies supplied 20,000 people. Three out of 20,000 was, to say the most of it, a small minority. But the petition he considered had been got up by the gas companies. As to the petition of the residents in the vicinity of the new site, he admitted their *locus standi*, but thought it should be confined to the interests of the petitioners, those parts of it referring to the general policy of the gas company being struck out. In short, he objected to the *locus standi* of all the petitioners, save that of the residents, which he was not quite sure he could shut out. But he would ask the committee to confine those petitioners strictly to the matters which concerned themselves. As for "consumers of gas," what he had said of the other consumers applied to them. Traders in the neighbourhood had nothing at all to do with it; but if they could show that the injury to them outweighed the advantage to the public, of course they had a right to be heard, and therefore he did not object to them. He would submit, however, that they should not be heard on the general policy of the bill, but only as to the injury likely to be done to themselves. The promoters had got a great number of withdrawals of signatures; and he had no doubt if the committee had been one day later, they would have had them all withdrawn. They did not come within 200 yards of any of these persons premises, and as they lived amongst all sorts of factories, upon which they were dependent, he had no doubt the more money that went into the district, the better they would like it. There was nothing unwholesome in gas-works, and at 200 yards distance he did not think those people would have noses that would be very much offended. There was not a single landowner objecting. There was a large quantity of building land owned by the person who sold the new site to the company; and as he retained the land adjoining, it was to be presumed he did not think it would be deteriorated by the gas company coming there. He believed there was really but one lessee, all the rest were yearly or weekly tenants, who had no real interest in the matter at all, and probably had not the slightest objection to the works. One of the allegations was that the additional quantity of gas required might be furnished by the Imperial Company, whose mains passed through the district. He could only conceive that allegation was intended to benefit the Imperial Company, and so the committee had them coming over again under the guise of people living near the gas-works, as it was very evident they never thought of it themselves. Another of the allegations was that when the wind was blowing in a certain direction, the smell and effluvia from the works would make their residences very uncomfortable. He had no doubt they would be only too happy when the wind did blow from the gas-works quarter, as on the other side was a place called Stinkhouse Bridge, and when the wind blew from that quarter, it was very much worse than it would be when it came over the gas-works. Still he did not think he could object to their *locus standi*; but when the committee saw on the face of the petition that it was evidently got up by the Imperial Company, he hoped they would restrict the petitioners to the allegations which really affected their own interests. It would be really too absurd that weekly or yearly tenants of a few cottages should raise the whole question of the principle on which the gas supply of the metropolis was to be managed, it would be an extreme waste of time, for they cared nothing and knew nothing about it. Their wants, if they had any, would be perfectly satisfied if they had their particular grievances inquired into. He, therefore, concluded by objecting to the *locus standi* of all the others, and asking the committee to restrict those petitioners to their own case.

Serjeant SARGOOD said, in support of the *locus standi*, to a very great extent he agreed with Mr. Venables that it would be somewhat absurd if the question of the principle on which the gas supply of the whole metropolis was to be carried on, was to be discussed on the petition of a few cottagers, and he was glad to have got, by his last observation, the admission that this was the principle the committee were asked to affirm. If nothing had been said in Parliament this year, except on the Commercial Gas Company's application for amalgamation, capital, lands, and new works, no one probably would have thought of opposing; but this was not the case, and there were three grounds generally on which the petitioners sought to be heard. First of all, with regard to the question of general metropolitan legislation which was involved in the passing of this bill; secondly, as to the needless outlay of capital which was asked to be authorized, because gas could be obtained from other companies without outlay; and thirdly, the special grounds of inconvenience that were alleged, on the one hand by the Imperial Company, who occupied premises on the other side of the Lee, and on the other hand, by the householders within the 300 yards radius. With regard to the first question, when this bill came before the Commons committee it was preceded by the bill for the amendment of the general metropolitan gas legislation, and against this general bill all the companies clearly had a *locus standi*, because then the principles discussed were admitted to be those which would govern all the companies if that bill, and when that bill, became law. Amongst others opposing were the promoters of this bill, who were the only ones who did not retire from any contest upon clauses when the committee passed the preamble of the general bill. [The learned serjeant explained at great length the course taken by the promoters of this bill in the discussion of the general measure in the Commons, all of which has been fully reported in the JOURNAL.] He said that the promoters transferred bodily into their bill 48 out of 61 clauses of the Metropolis Gas Companies Bill, and these two bills then went back to the House of Commons arm-in-arm. The Commercial Bill passed, as a local and personal measure, through the House, while the big bill, which was the father of the 48 clauses, remained behind. There was a great and strong difference of opinion upon the policy of that general legislation, and it was perfectly clear, that until next session, the House of Commons would not have made up its mind, or have had an opportunity of discussing whether or not it should become law. On this branch of the case he therefore asked the committee what course ought to be taken under the special circumstances. The petitioners retired from the Commons committee, intending to discuss again in the House of Lords, when the general bill came up, the whole of the clauses. The promoters adopted 48 of the clauses, which were of public importance, and now came to ask the committee to decide that the petitioners had no *locus standi*, in order that they might pass, as an unopposed bill, 48 clauses of a public measure which had not yet escaped the Commons with its

sanction; thus anticipating next year's discussion, when, if ever those 48 clauses got through the Commons, the whole question would have to be re-opened in this House. The promoters had prepared their original bill, to a great extent, to satisfy the Metropolitan Board of Works, and to the extent, therefore, to which the general bill, in its passage through committee, became altered, to that extent was their bill altered; and yet they asked the committee to affirm all the principles embodied in the 48 clauses, rather than say, "We will discuss them when they come up, as they ought to do, as general law." It would, he thought, be unfair to the other companies if the committee were to do that behind their backs, because they would be met next year by this: "How can you come and oppose general legislation when their lordships affirmed it as a very proper thing for the Commercial and Ratcliff Companies last year in their special bill?" If the committee thought it a convenient course to discuss, on a local and personal bill, the principles of the public gas legislation of the metropolis, then the companies ought to be heard, and the proceedings in the Commons committee repeated. But he suggested that then they might be affirming that which presently the House of Commons might say, when they came to consider it, they did not mean to sanction. The promoters, he said, ought to withdraw all they had taken from the general bill, and leave it until the Commons had sanctioned a bill in some form or other, and it came up next year for the consideration of the House of Lords. If they would do this, he should not struggle to embarrass them by seeking a *locus standi* upon any other points; but, unless the committee were prepared to hear the company as fully upon those clauses, which were the general legislation, though only applied to the Commercial Company at present, as the Commons committee heard them on the general measure, it would not be fair to discuss clauses which, after all, the Commons might repudiate next year. While the Metropolis Gas Bill was tied up as it was till next session, none of the clauses that were embodied in that bill ought to be inserted in a local bill, and the committee ought not to be unwarily drawn into an approval of those principles without discussion, or with a needless discussion of four or five days, only to find after all that the House of Commons had declined to give its assent to them; so that, though they had aimed at anticipating legislation, they had failed to do so, and had still the general bill to discuss. It might be said by the promoters that no one was affected by this bill but the Commercial Company; and, if they chose to accept those clauses, what right had anybody to interfere; and, further, that it was what was done by Lord Cardwell's committee in 1868. The distinction was that Lord Cardwell's committee passed a general Act, applicable to the City of London, and, in its state of law, was adopted by the Chartered Company, and extended to so much of the metropolis as that company were supplying. In the following year the Imperial Company adopted, with few exceptions, the existing law, and extended it to their district, and any other company might come in with a short bill and adopt the 1868 legislation, which was sanctioned by Parliament; but the mischief that was, in the present case, being done, was adopting professedly inchoate legislation, which had not at present obtained parliamentary sanction. That was the first branch of the objections raised by the petitions, and if the promoters would agree to withdraw all those clauses, he might relieve them of any difficulty about the remainder of the bill; but, if they did not do so, he was entitled to be heard upon the other subjects. With regard to the needless outlay of capital, Mr. Venables said the Imperial Company could not supply in bulk, but that was a case to be heard on its merits. If the committee thought that £560,000 of new capital would be a burden upon the consumers of gas, and that it was needless to raise it, then they would have a reason for refusing; and if it were refused, what would be the use of the bill to the promoters? The petitioners alleged that the capital was not wanted, because other people could give them gas to go on with, and so this bill could stand over very well till the public legislation of next year. With regard to the third point of inconvenience that might be caused to the Imperial Company, he said it was true the Lea was a public river, but the Imperial Company had been obliged to build, at great expense, a dock for themselves, in order to escape from all the local inconveniences of a navigable river. This dock would be utterly useless to them if they could not get access to it; and as the promoters did not come for money to build a dock, they would be occupying a site in the river where the petitioners traffic constantly required to pass. With regard to the other petitioners who spoke of nuisance and injury to property, it was conceded that they had a right to be heard, but he did not seek to take advantage of a narrow *locus standi* of that sort to introduce a discussion upon the large questions which were raised in the other petitions. Upon the general question, and the far more important one, he submitted that if the bill went on with the clauses from the general measure in it, then he had a right to be heard, and to reopen the discussion for which the companies had reserved themselves when they retired from the House of Commons.

Mr. Venables, in reply, said that, if the promoters withdrew all the clauses taken from the general bill, they would have the Metropolitan Board at once opposing them, and probably fatally. Besides, even if the committee passed the bill without those clauses, the House of Commons would reject it. His learned friend, Serjeant Sargood, was wrong about his 48 clauses. Somebody had, no doubt, pointed them out to him, but that somebody was mistaken. There were 48 clauses, taken either from the legislation of 1868 or from the bill of the present year, which included a great many of the clauses of the 1868 Act, as this was the most advanced legislation. Now it was altered according to the opinion of the Commons committee, which did not yet amount to legislation.

Serjeant Sargood: I might be mistaken in that. I have no objection to say that, so far as you import any of the legislation of 1868, which is law, I have no right to object; but, so far as you put anything into the bill which is not yet law, I want the committee not to make it law.

Mr. Venables said Serjeant Sargood's objection was that they would establish a precedent. It was absurd to say that, by accepting those terms which were required by the Metropolitan Board of Works, and sanctioned by the Commons committee, they in any way prejudiced the question of general legislation. The promoters were willing to accept those terms, in the interests of the consumers, for themselves and for no one else. His learned friend had done what he had appeared for, by making a protest against its being supposed that the companies he represented were bound by the provisions of this bill. Supposing a great railway company were to introduce a bill for reducing their maximum fares, would an adjacent or another railway company have a *locus standi* against them to say, "You shall not reduce your fares, though you are willing to do so, and though it would be obviously beneficial to the public, because it might be made a precedent for our reducing our fares?" If this bill were to pass, it would not affect the Imperial Company in any way whatever; they would retain exactly the powers they had and the rights they had —amongst others, the right of opposing the bill to which they objected if it were proceeded with next session. All the promoters said was that they were willing to accept this bill. They did not affirm the principle that these clauses ought to be compulsorily imposed upon any one else because they were imposed on them. From first to last, not one single point had been suggested in which the condition of the Imperial Company would be altered by the passing of this bill. It would not do to say the company had such a kind of imaginary interest as that it might be a precedent for future legislation. If a horse were to be sold for £50, had a neighbour a right to say, "You have treated me very ill; I have a horse no better than yours, and I want to sell him for £100, and you lower the price upon me?" Would he have a right to complain? Certainly not. In this case every one of the things was for the benefit of the Commercial consumers, but did not affect the consumers in the Imperial district, or any one whom the Imperial Company had a right to represent in any way whatever. The promoters could not withdraw those clauses. In the first place they did not want to, and in the next place the whole of the question would come up on the opposition of the Metropolitan Board of Works, who, on their petition against alterations, would be entitled to go into all those points, and would have the right to see that the consumers were not deprived of the security which the promoters said they were willing to give them. These companies did not oppose in the Commons, and he presumed they would not have opposed here except for this—that the Chartered Company, who had a sort of fragment of *locus standi*, did there oppose, and they, perhaps, relied upon them.

Serjeant Sargood: The only reason we did not oppose was, that we supposed both bills would come up together, and we thought the general bill would be discussed first, and the other bill altered to agree with any alterations that might be made.

Mr. Venables said the contention on the part of the Imperial Company was absurd, for in 1869 they did exactly what the promoters were then doing. They accepted more stringent legislation than any under which the Commercial Company existed, even up to the present time. Did the Commercial then oppose, and say, "Here are more stringent provisions than those to which we are subject, and we object to them"? Not the least; they could not have done it, and the Imperial could not do it in the present case. Serjeant Sargood illustrated the confusion that would occur if the committee admitted him. He claimed to go into the whole of the legislation to show that that which the promoters were willing to submit to as against themselves, ought not to be allowed to prevail, though the consumers represented by the Metropolitan Board wished it, and the promoters themselves were willing The petitioners had no right to forbid that arrangement or to interfere in it in any way. The promoters did them no wrong, and they did the consumers a great deal of good, and hoped to do good for themselves also.

The room was then cleared, and, on the parties being again called in,

The Chairman said the committee were of opinion that none of the petitioners against the bill had any *locus standi*, with the exception of the consumers of gas in the Commercial Gas Company's district and the lessees and occupiers of houses and property within 300 yards of the new works.

Mr. *Richard Bradshaw*, examined by Mr. Pope.

I have been a director of the Commercial Company for ten or eleven years and deputy-chairman for two or three years. I have taken an active interest in the concerns of the company, and intimately know its whole affairs. The company was originally formed under a deed of settlement in 1836, and re-constituted in 1839. Their first Act was in 1847, and by it the capital was fixed at £150,000, with £50,000 additional borrowing powers. In 1850 they acquired, under Parliamentary sanction, the undertaking of the Poplar Gaslight Company, and in 1852 that of the British Gas Company, which were two companies selling gas within the district covered by the Commercial Company. The result was to raise the capital of the concern, including borrowing powers, to £450,000. Since 1852 the company have not gone to Parliament to increase that amount, which has all been raised and expended, and their present position is that the whole is subject to 10 per cent. dividend. The proposal in this bill is that the new capital shall be raised at 7 per cent. *pari passu*, with borrowing powers which are to be exercised at 5 per cent., so that the average cost to the consumers will not exceed 6 per cent. For some years in the early part of its history the company were not prosperous, they did not pay any dividend. In 1850 Mr. Butler, M.P. for the Tower Hamlets, took an interest in its affairs; and since the appointment of Mr. Robert Jones as engineer it has become very prosperous. The district extends from the Thames on the south to the parish of Hackney on the north; and from the river Lea on the east to the City boundary on the west, thus serving ten parishes. The number of consumers on the books is about 18,000. By the general Act of 1860 we were limited to a charge of 4s. 6d. per 1000 feet, which might be increased to 5s. 6d. under certain conditions. Since 1868 we have never charged as high as 4s. 6d. During the coal famine the highest we charged was 4s. Our present price is 3s. 9d., which is what is proposed by the bill as the maximum. We are now supplying 15-candle gas, though we are only bound by our present parliamentary obligations to supply 12-candle gas. The proposed illuminating power under this bill is 16 candles. Our performances of our statutory obligations have been perfectly satisfactory, as far as we know, to our consumers and to the public authorities in the district. We have had no complaints whatever, nor is there any allegation in any of the petitions that our supply has been inadequate or unsatisfactory in any way. We have hitherto been able to supply our district, but our means are now entirely exhausted. Last winter, during some months we had not a single retort out of action. We have, at our present works at Stepney, some small reserved space which would be available for storeage, but not for production. It is necessary, in the economical laying out of gas-works, that the two should go together; the additional storeage space would not enable us to do anything towards increasing the supply to the district. It is absolutely necessary for us to have increased means of production, in order to overtake the increasing wants of the district. We became alive to that fact in 1872, and instructed Mr. Jones, our engineer, to consider the best site and report to the board on the subject. The result of his careful investigation has been the selection of the proposed new site on the bank of the Lea. On the other side of the river, but not immediately opposite, are the works of the Imperial Company. The stream is navigable at high water, and would, therefore, offer facilities for bringing coal and carrying away our products, thus dealing with the whole manufacture in an economical and satisfactory way. The neighbourhood itself is essentially a manufacturing district, abounding in chemical works, catgut manufactories, match works, and those kinds of places —in fact, the proper name for the place is Stinkhouse Bridge. The site on which we propose to erect our works is at present vacant, and so is that surrounding it. The nearest inhabited house is, I should think, 200 yards off, and so it is certainly not accurate to say that the works would immediately abut on the premises of the petitioners. The houses round about are small, most of them being let to weekly tenants, and are such as would be occupied by the working classes employed in the district. Mr. Abbott, the man of whom we purchased the site, is owner of all the surrounding land. We have only contracted for the site we require, leaving in his hands a considerable portion of vacant land to be occupied by buildings, if he should choose to erect them. In my judgment this is a very available and proper site for the establishment of our new works. With regard to capital, we propose to raise £560,000 additional, half by shares, and half by borrowing—the shares at 7 per cent., and the loans not exceeding 5 per cent. There is also a proviso that we are not to issue more than £70,000 of capital at first without issuing £70,000 of loans, so that our first £140,000 will average 6 per cent. The £560,000 will last for about 12 or 13 years.

By the Committee: We do not proposed to raise the whole amount by loan, because it would make the loan capital out of all proportion to the share capital, and besides it would be difficult to raise it all in that way. The reason money can be borrowed at a lower rate than it can be got by share capital is that the larger the margin of security, the cheaper money can be borrowed. We should borrow, of course, at the lowest rate we could, at less than 5 per cent., if possible. I do not think we could borrow £300,000 at 5 per cent., because the margin of security would be so small. The 7 per cent. shares we should offer to the present proprietors at par. No doubt many of them could

borrow privately at less than 7 per cent., and so it might occur that getting the money at rates between 4 and 5 per cent., and laying it out at par, they would receive the 7 per cent. dividend, without risk on their part.

Examination resumed: Supposing, instead of raising this money by the issue of shares, we were to seek to borrow it all, it would have to be obtained on the security of the existing undertaking, which has cost £450,000. This is all we should have to offer to the lenders of the £560,000, and is a security which they would not be likely to take. But if we increased that security by expending share capital upon it to the extent of £280,000 more, *pro tanto* we improve the security for the £280,000 we have to borrow. We shall then have an undertaking which has cost £450,000, *plus* £280,000 to offer as a security for £280,000, and this will enable us to borrow cheaply.

By the COMMITTEE: The bill will enable us to borrow money at rates which possibly may be less than 5 per cent.; but that would depend on the state of things at the time. The dividend we propose to receive on all the money borrowed is not necessarily 5 per cent. We ask for power to raise £280,000 at an interest not exceeding 5 per cent.

Examination resumed: Supposing we were to succeed in raising the whole of the loan capital at 4½ or 4 per cent., it would not in the slightest degree increase the amount of dividend we could divide. The result would be to enable us to reduce our price for the benefit of the consumers, as in any other matter of management a reduction of price could be accomplished. Our dividend is limited up to a certain point, and unless our price of 3s. 9d. be maintained, it may be decreased. Under the present bill, if the price of 3s. 9d. is increased, to the injury of the consumers, then, whether we raise the money at 4½ per cent. or not, our dividend must be decreased.

Lord HATHERTON: If the whole capital were raised by loan instead of by share and loan, surely the consumers would reap the benefit of the difference in the interest paid; and I do not see how you get additional security by having half the sum taken up in shares, because the security is the property which you are going to build.

Mr. POPE: No; the security is the responsibility of the undertaking, which is represented by its share capital. It is not a mere mortgage upon the real property erected by the company; it is borrowing money upon their credit, and this credit depends on the amount of their capital.

Lord HATHERTON: The capital only represents the property which the company have.

Mr. POPE: It may represent something more.

Lord HATHERTON: Yes, if each shareholder is responsible in his individual capacity for a portion of the money raised on bond.

Mr. POPE: He is responsible up to the amount of his share capital. If you have shareholders responsible to the extent of £730,000 for the debt, you have better security than if they were only responsible up to £450,000. The truth is, it is only the share capital which carries dividend at all.

Witness: Yes; because interest upon loans, be it large or small, is simply an expense in the management of the concern, like rent or anything else. What we propose to do, so to speak, is to take in additional partners to the extent of £280,000, to divide profits upon that, up to 7 per cent., and in the interests of the consumers, instead of the remaining £280,000 dividing profits, the lenders are to be paid as low a rate as we can, in the same way as we would pay as little rent or freight as we could. We buy money in one market the same as we buy our coal in another market upon the credit of the concern. The better the security the lower the rate at which we can buy money.

By the COMMITTEE: No doubt we could equally raise the same amount of money if there were only one shareholder. The security consists in the amount of money which has been subscribed by the shareholders and expended.

Examination resumed: There is a recognized proportion between share and loan capital, which Parliament has generally dealt with, and it has been found available as regards the general tone of the Money Market. A gas undertaking is not a security like fields, it is one with more or less of a trading risk, and therefore we require to have a sufficient margin to justify us in expecting to borrow at a reasonable rate. The better the security, the better for the consumers, because we can borrow the remainder of the money at a less rate. This matter has been largely discussed, and this mode of raising money has been assented to by those representing the consumers, as under all the circumstances the best to be devised in their interests.

By the COMMITTEE: We propose to raise this money by debenture stock.

Mr. POPE: Then there is another question involved in this—viz., the question of priority in case of liquidation. To make this a capital all raised by loan would be to create a preferential liability to the extent of £560,000 over the old shareholders.

A LORD: Could you not raise the whole sum by debenture stock? The only risk parties could have taking it up at 5 per cent. would be that the undertaking would not be carried on by the amalgamated companies.

Witness: I do not think we could, as the security would not be sufficient, the capital of the amalgamated undertaking being only £565,000.

Examination concluded: The Metropolitan Board of Works discussed this question of capital before Mr. Forster's committee, and quite acquiesced in the arrangement. With regard to the dividend upon this capital, it is proposed that, fixing the price for 16-candle gas at 3s. 9d., for every penny we go up in price beyond, we are to have the dividend reduced by 5s. per cent. That makes the shareholders partners with the consumers in an interest in keeping down the price of gas. In case, however, we are able to reduce below 3s. 9d. so as to give the consumers an advantage in point of price, we should then be enabled to give the shareholders an increase of dividend to the extent of 5s. for every penny. It is, therefore, our interest, as well as the interest of the consumers, to keep down the price at which we can borrow money to the lowest possible point, because then the consumer will get his gas cheaper, and we may get a little more than 7 per cent. on the new shares. With regard to the amalgamation between us and the Ratcliff Company, it will, in my judgment, be for the advantage of the public. We propose to amalgamate upon terms of equality, the new company taking over the assets and liabilities of the two old companies jointly. I have every reason to believe that it is entirely approved of by the local authorities of the district, and by the Metropolitan Board of Works. I do not know any one who disapproves of it. It would enable us, by means of economical arrangement of distributing power, to serve the district even better and more efficiently than we do at present, and will give the Ratcliff Company an interest in the new site, which is as essential for them as for us.

Serjeant SARGOOD said he did not propose to cross-examine the witness. He thought it right to inform the committee that he had been conferring with his clients upon the result of their decision upon the question of *locus standi*. It would be seen that the main anxiety of the petitioners was that they should not be prejudiced next year by any course that might have been taken upon the present bill, but, as the committee thought that they were not entitled to be heard upon general legislation, he did not think the narrower basis upon which a *locus standi* had been granted them was such as would give him an opportunity of profitably employing the committee's time. Therefore, accepting their decision with the respect due to it, they would not take any further part in the discussion.

The room was then again cleared, and, on the parties being recalled, they were informed the committee would proceed with the clauses, which were read, and, with amendments, agreed to. The preamble was read and agreed to, and the chairman was directed to report the bill to the House.

Legal Intelligence.

LIVERPOOL ASSIZES.—THURSDAY, AUG. 20.

(Before Baron HUDDLESTON *and a Special Jury.)*

THE MERSEY DOCKS AND HARBOUR BOARD *v.* THE LIVERPOOL UNITED GASLIGHT COMPANY.

The SOLICITOR-GENERAL (Sir John Holker, Q.C.), Mr. POPE, Q.C., and Mr. GULLY appeared for the plaintiffs; Mr. ASPINALL, Q.C., Mr. C. RUSSELL, Q.C., Mr. R. G. WILLIAMS, and Mr. CROMPTON appeared for the defendants.

This was an action to recover compensation for the destruction of the landing-stages on the Mersey by fire, on July 28, 1874, the damages being laid at £200,000. The declaration stated that the plaintiffs were the owners of the landing-stages in question; that they employed the defendants to fix and lay down certain gas-pipes under and round about the stages; that the defendants did not use due care and diligence in fixing and laying them down, but negligently allowed the gas to escape and take fire and burn for a long time, and that the fire came in contact with the stages, whereby they were destroyed. The defendants pleaded, first, not guilty; secondly, that they were not employed; and, thirdly, that the plaintiffs were not the owners of the landing-stages. On these pleas issue was joined.

The SOLICITOR-GENERAL, in opening the case, said the plaintiffs were the Mersey Docks and Harbour Board, who had vested in them, by Acts of Parliament, the administration of the estate called the Dock Estate; and the defendants were the Liverpool United Gaslight Company, who had supplied the gas to all the lights on the quays and landing-stages and piers connected with the docks for a considerable number of years. On July 28, 1874, a fire of a very extensive character occurred, and consumed the whole of the landing-stage, which had then just been completed or was about to be completed. That fire occurred, as the plaintiffs alleged, through the negligence of the defendants servant; and if it did, the plaintiffs were entitled to a verdict, no matter how large the amount would be. With respect, however, to the amount of damages, he could not apprehend that the jury would be troubled with that question, because he felt quite clear that everybody connected with the case would come to the conclusion that if the liability of the defendants was established, the amount of damage had better be ascertained elsewhere by some engineer, or some one competent to go into the whole of the items. Prior to the disaster there were two stages, the George's and Prince's. The latter, which was completed in 1857, was the larger, being 1000 feet long by a little over 81 feet broad. The George's stage was 540 feet long by about the same breadth, and it was completed about ten years before. In addition to these structures the Dock Board were the owners of another stage of very considerable magnitude which had been put down in Birkenhead, in the low-water basin. For some reason it had not answered the purposes for which it was designed, and it was no longer useful on the other side of the river. In 1871 or subsequent to that the plaintiffs determined to put that stage to another use. In 1871 they were empowered by the Mersey Docks Act to improve the approaches to the river. There was a gap of some 500 feet between the end of the Prince's stage and the north end of the George's stage, and one of the improvements contemplated by the Act was to fill up the George's basin and a little one at the side, called the Seacombe basin, and to make a floating roadway from the street to the stage. It was intended to connect the two stages, so that there should be a continuous structure from north to south, and it was also intended that there should be an embayment for steamboats. The plaintiffs, considering how they could best carry out the work sanctioned by Parliament, determined to utilize their old Birkenhead stage by elevating one part of it to be inserted between the George's and the Prince's, and the other to make a fresh George's stage, the old one there being considerably worn. The work, therefore, which practically had to be done was—dividing the old stage, bringing it across the river, attaching a portion of it to the Prince's stage, making necessary alterations, constructing the embayment, making the new George's landing-stage out of the old Birkenhead stage, and connecting the north end of it with the intermediate stage. The execution of this work was entrusted to Messrs. Brassey and Co., the eminent engineers. On July 28, 1874, it was almost completed, and the floating bridge had been constructed. The intermediate stage had been constructed, with the embayment, and was joined to the Prince's stage. The public were, in fact, using the whole of the stage, although the necessary connexion between the intermediate stage and the George's had not been effected entirely. The workmen were in course of making that connexion, and if this lamentable fire had not occurred it would have been completed within a week or two. He (the Solicitor-General) would now draw their attention to the mode in which the stage was constructed. It was composed of a number of rectangular pontoons placed transversely, and on the top of them were box girders, running longitudinally from end to end. Wooden beams surmounted these, and upon them the deck was built. It was now necessary to say a few words with reference to the arrangement as to the supply of gas. The defendants had for many years been in the habit of supplying the plaintiffs with gas for the landing-stages and for all the other portions of their property. They provided all the necessary pipes, mains, tubes, and burners, kept them in repair, and also provided men to light and extinguish the lamps. They also looked after and superintended the arrangements, for cleaning the lamps, leaving the plaintiffs nothing whatever to do except to provide the pillars and the lamps and to pay the company for what they did. They did pay the defendants handsomely, and the rate of renumeration was so much per light per annum. Some portion of the woodwork of the stage was saturated with creosote. There was a 3-inch main running underneath the deck, from which there was a branch pipe taken under the box girders, and when it was got underneath the stage it communicated with a 2-inch main which ran up all the length of the structure; "union joints" at the entrance to the bridge and at the foot prevented the gas arrangements from being disturbed by the rise or fall of the tide. Before the improvements were effected, the communications between the main and the gas-pipes underneath the stage were brought over bridges Nos. 3 and 2; and at the top of each of these bridges there was a stop-cock, so that the gas could be turned off without any difficulty whatever. And there was another stop-cock a little to the southward of the land end of No. 3 bridge; and he would be in a position to show that there were similar stop-cocks at the end of the bridges communicating with the George's stage. On the 7th of July, the intermediate stage having been got to its position, Mr. Lyster, the dock engineer, being anxious to have lighted the whole length from the north end of the Prince's stage to the point where the junction was effected with the George's stage, wrote to the gas company saying he would be glad to see some representative of the company who could receive instructions in reference to some gas-pipe which was required to be laid to the intended lamps on the new portion of the stage, and on the following day one of the company's foremen named Walker came down and took his instructions. Mr. Lyster pointed out to him how many lamps there were, and the position in which they were placed, and then he left him to do what he believed the gas company always did—make the arrangements for supplying the lamps with gas. He thought that, altogether, there were 9 or 10 lamps which had to be supplied with gas; and the foreman, having had a sketch given to him, and having had pointed out to him what was required, said he would set to work with all despatch. Mr. Lyster was urgent that the lamps should be ready for lighting by the 16th, and the foreman promised they should be ready, though perhaps temporary arrangements would have to be made at first. The gas-fitters came down and set to work, and by the 16th of July the communications were made, and the lamps were in a state to be

lighted. It would appear that temporary communications were made between the mains, and some, if not all, of the lamp-pillars. With regard to two of the three communications, there was a means of stopping the gas at once, if it was necessary to do so, but it would seem that the defendants, when they let their 6-inch main down, provided no means of cutting off the gas at all. They had no stop-cock for it, and it was not until quite recently that it was known they had none at the top of the bridge communicating with this main. It was possible that they might have some means, which the plaintiffs had not been able to discover, of cutting off the gas communication between the land and the bridge. At one time the plaintiffs thought there was a stop-cock somewhere in that direction, but upon investigation it was found that what appeared at first to be a stop-cock was not one, but the top of a syphon. The works connected with the lighting of the stage were carried on by the gas-fitters almost continuously up to the 16th, and a number of them were working there on the 28th of July, the day of the disaster. On that day they were engaged doing something with the main beneath the stage, and he thought the jury would have little doubt, from the evidence, that they were making a permanent connexion between the 2-inch main, which was under one of the box girders, and the lamp-post, at the north-east corner of the embayment. The communication would be by means of a 1-inch branch pipe, and to carry out this work the workmen would have, for some portion of time, to leave open the orifices into which the permanent pipe would have to be screwed. Although it was not quite clear what they were exactly doing, there could be no doubt they were engaged in the job described. A witness would be called to prove that about three o'clock he and a number of his fellow-workmen were getting water (by means of a syphon) into a pontoon for the purpose of sinking it lower than the bottom of the box girder, and so getting it away. He was standing about the centre of the pontoon in one of the three avenues running under the stage opposite the embayment, when something caused him to turn his head, and he saw, about 150 feet to the northward of where he stood, a very strong light which burned vividly. And he also saw at this very spot one of the gas-fitters, who was moving about. The light was stronger than he had ever seen before for this kind of work, but as the man did not cry out for help, or say anything, the witness referred to did not pay further attention to the matter, but resumed his labour. In a few minutes afterwards he perceived a strong smell of burning, which was followed by a rush of smoke from the direction in which he had seen the light. Those who were engaged on the pontoons were obliged to make their escape for fear of being suffocated, and got from underneath the stage by the man-holes to the southward. About three o'clock Mr. Lyster was standing on the deck talking to the stage master, and he would prove that he saw a man coming out of one of the man-holes without his coat, and in his shirt sleeves. He was a gas-fitter, and came hurriedly up in a state of great excitement and alarm. At that time there was smoke coming from the man-hole out of which this gas-fitter had emerged, also from others, and he thought also from the foot of the gas-pillar. The attention of everybody on the stage was directed to what was going on. The gas-fitter whose conduct attracted the notice of Mr. Lyster seemed almost deranged, but he ran in the direction of the new bridge, and was lost sight of. The flames burst from the stage, and in a very short space of time the structure was on fire. It burned with great fury, and though everything was done to arrest the progress of the fire, the stage was destroyed. When the gas-fitter was seen coming out of the man-hole making exclamations and conducting himself in an excited manner, evidently something had just been set on fire, and shortly afterwards gas-fitters were seen at the top of the bridge endeavouring to turn the stop-cock and to cut off the communication of the gas. They were not able to turn the cock, but they got up the flags around it and broke the pipe, by doing which they cut off the communication at that place. At other places they were seen endeavouring to stop the gas, which would be, of course, on at full pressure underneath the stage. That was very like shutting the stable door when the steed had gone; because, though it might be a prudent measure at that time, it would have been a much more prudent step if the gas-fitters had tried before to make communications between the main and the foot of the lamp-post which turned the gas off. If they had done that then, there would not have been anything like the probability of danger which there was whilst they were doing that work, the gas being on at full pressure. The main was at the top of the box girder immediately under the creosoted beams of the deck, and a more dangerous position for the pipe to be in could hardly be conceived. He did not say it was improper for the company to place the pipe in that position—far from it; but he contended that any workman who was making a communication for a 2-inch main, by an orifice in the main, was bound to use the greatest possible care and circumspection; because the moment there was an escape of gas, the light by which he was working would set it ablaze, and the almost inevitable consequence be the destruction of the whole stage. That was in fact what happened. He did not say that under all circumstances gas-fitters, before they did any work at the gas-pipes, ought to have the gas turned off. Perhaps it might be necessary for them sometimes, when they had to examine a junction, to see whether it was tight or not, to have the gas turned on; but when they were making a communication between a main and the foot of a lamp-post, in close proximity to highly inflammable materials, they certainly were bound, as a matter of prudence, to have the gas turned off before they commenced the work. He would ask whether, in the immediate neighbourhood of beams saturated with creosote, it was a prudent thing for a man to be working with a naked light in his hand, without taking the precaution just mentioned. There had been some statement made about plugging the hole. Well, if the gas people had used the proper plugs which were provided for them to use—if they would take the trouble to use metal plugs with screws, instead of plugging the orifice with a piece of wood and tow, or anything of that kind, it would have been much better. But whether they were plugging with one or the other, before they could make the communication which they were about to make, it would be necessary for them to remove the plug, to lay the orifice bare, and the gas would escape in great volumes, unless they took some precaution or other for cutting it off, and the consequence would be that it would be set alight. These were the facts of the case. Of course the plaintiffs were, no doubt, to some extent, in the dark as to what was going on underneath the stage, but that the gas-fitters would, in the ordinary course of business, be making communications, that they were engaged about that kind of work, that this brilliant flame was seen by the workman, and that immediately after there was a fire and the gas-fitter escaped, there could be no doubt whatever. Under such circumstances, he (the Solicitor-General) would submit more as a question for the learned judge than for the jury, that this was a case in which the very nature of the accident afforded *primâ facie* evidence of something having been wrong, or some negligence having taken place. The thing, in fact, spoke for itself. It was quite true that when the defendants witnesses came into the box they might be able to afford some explanation, and satisfy the jury that something wrong had occurred for which they were not responsible. At all events, if he proved to them on behalf of the plaintiffs that which he had stated, he thought they would be of opinion that it was enough to call upon the defendants for this explanation. So far as the plaintiffs had been able, they had endeavoured to get from the defendants an explanation of the cause of this lamentable catastrophe, but they had endeavoured without success; for up to that moment the defendants had kept a silence about the matter, which was, perhaps, a very prudent silence under the circumstances. These were the facts of the case. If it was necessary that he should go into the question of damages he was prepared to do so, but he thought the jury would not be troubled with that question. They would have to ask themselves, when they had heard the evidence on both sides, whether the servants of the gas company who had undertaken this work, and were paid for it, were guilty of negligence—*i. e.*, did the gas company's servants do something in executing the work which an ordinarily prudent man would not do, or did they neglect to take some precaution which an ordinarily prudent man would have taken? If they either did the one or neglected to do the other, they were guilty of negligence, and the gas company, who were their employers and masters, were responsible for the damage which had been caused thereby.

His Lordship asked whether it was agreed between the parties that the jury should only have the question of negligence to decide.

Mr. Aspinall said he thought there might be a question of law about the damages as well as on the question of liability. However, if any necessity arose for discussing this matter, he should have no difficulty in arranging it with his learned friend.

The Solicitor-General said there might be some points of law with reference to the damages—as to whether certain portions of the damages could be recovered—but they could settle that by giving the arbitrator power to state a special case.

The first witness called was

Mr. George Fosbery Lyster, examined by Mr. Pope.

Witness was engineer to the Dock Board, having held that appointment some 14 years. He was familiar with all the estate and property of the board. Before the alterations, which were sanctioned in 1871, the landing-stages consisted of the Prince's and George's stages, as two separate structures. The Prince's stage was originally constructed by the corporation, and transferred to the Dock Board by the Act of 1857, which constituted the new trust. There was a gap of about 500 feet between the two stages. The intermediate stage was permanently attached to the south end of the Prince's stage, and the bridge leading to the centre, abreast of the embayment, was permanently in its place. The main beams before the fire were of Baltic timber, creosoted. That would be obvious to persons who went below; they could both see it and smell it. The wood was creosoted to preserve it from the weather. The gas company were never interfered with as to the way they laid the gas. When he gave the instructions to the company's foreman about lighting the intermediate stage, he simply told him where he wanted the lamps, and left the work entirely in his hands. On the afternoon of July 28, about a quarter past three o'clock, he was standing on the landing-stage, near the southern end of the embayment, talking to the stage master, when a man came running up to them from towards the northern end of the embayment. He seemed very excited. He was red in the face and perspiring profusely. He was in his shirt sleeves, which were tucked up to the elbows. He had no cap on, and he was gesticulating violently, moving his hands up and down. After speaking to witness, he ran off in another direction and disappeared. Witness saw a crowd collecting at the north end of the embayment, about 40 yards from where he stood, and, on going there, he saw a dense smoke coming out of one of the man-holes. The cover was off the man-hole, and a dense smoke was issuing from it. He did not know who the man was that appeared excited. As soon as he saw the smoke coming from the man-hole, he ordered preparations to be made to extinguish the fire. He instructed carpenters to cut up the stage with adzes, but the flames were so rapid that it was perfectly impossible to cope with the conflagration, and the whole of the structure was burned.

His Lordship said he thought it would be well, at this stage, to agree as to what was the amount of damage done.

The Solicitor-General suggested that, in the event of a verdict for the plaintiff, the damages should be assessed by somebody to be agreed upon by the counsel on either side, and that the gentleman who assessed the damages should have the power to state a special case.

Mr. Aspinall said he had great difficulty at present in stating the view he took, but the course suggested might involve the arbitrator trying over again very nearly the whole question which the jury would have to try, and he asked his lordship to wait a little till they could better see what their position was.

The Solicitor-General said they would abstain for the present from stating the amount of damages. It was a very large sum.

Mr. Aspinall said it was about £200,000.

His Lordship said it was not a question of amount. The question was whether the Dock Board or the gas company were to suffer the loss. If the fire was nobody's fault, then the Dock Board must bear the loss; but if it was the fault of the defendants, then the gas company must bear the loss.

Witness, cross-examined by Mr. Aspinall, said the contractors, Messrs. Brassey had finished the stages with the exception of the junction of the decks at the time of the fire. Iron had been substituted for wood in the beams of the new stage, but the two decks were still of wood. The lower deck was composed of greenheart instead of Baltic, and it was not creosoted, because greenheart would not take creosote. In the stage as now constructed there was no cresoted wood at all. The pipes on the Prince's stage were the property of the Dock Board. Those on the intermediate stage were put down by the gas company.

George Harris said he was a dock labourer working under Mr. Furness, foreman in the employment of Messrs. Brassey. He and some other men were filling a pontoon on the day in question, a little to the south of the new bridge facing the embayment, there were three avenues in the embayment, and he was working in the centre one about three o'clock, when he looked in the direction of the north. He saw a man standing upright, and in front of him there was a light. He was 50 yards distant from witness, and was either in his shirt sleeves or had a white jacket on. The light before him was a larger one than witness had been accustomed to see on the stage. The light was opposite to his breast or face, and was flaring, and at that time the man was going on with his work in the ordinary way, appearing not to be confused. Witness turned round again to resume his labour, but in a very few minutes was obliged to leave in consequence of a quantity of thick smoke coming from the northward. The 2-inch main gas-pipe was in the avenue where he was working, and it was in that avenue that he saw the light and the smoke. Earlier in the day he had seen gas-fitters working about the place where he saw the light. He did not know of any of the Dock Board's men working in that avenue but himself and those who were with him filling the pontoon. They had a naked light burning, but no gas was escaping where they were. He could not recognize the man he referred to, nor say whether he was a gasman or not. He supposed him to be one.

Witness, in cross-examination, said it was very dark under the stage, and he took it that the man had an extra big light to do his work by.

Another labourer, *Patrick Calvey*, in the service of the Dock Board, deposed that on the 28th of July he was working with the last witness, when he saw a man and a boy about on a pontoon to the northward. He knew they were gasmen. In about half an hour after he saw the last of them, smoke came from underneath the keelsons in thick volumes, and he retreated and escaped through one of the man-holes.

Thomas Dutton, another labourer employed on the landing-stage, said he was working in the next avenue to Calvey and Harris, and before the fire he saw a man and a boy to the northward of him. They were not Dock Board labourers. One of them got over the keelson into the centre avenue, and witness lost sight of them. About ten minutes or so afterwards smoke came in volumes, and he made the best of his way out.

FRIDAY, AUG. 21.

Mr. *R. Chaffers*, examined by the SOLICITOR-GENERAL.

Witness was the master of the George's stage. On the afternoon of the 28th July, 1874, he was standing on the stage, near the embayment, in conversation with Mr. Lyster, when Richard Sharp, one of the Dock Board men, passed up in company with a gasman, and went to the southward. Immediately after, witness saw smoke issuing from the man-hole, and, on looking at the opening, the two men returned with buckets. He had often seen one of these men going backwards and forwards on the stage, and he was a gasman employed by the defendants to work there.

The SOLICITOR-GENERAL: Did the man you believed to be a gasman say anything when he came back to the man-hole with the bucket?

Mr. ASPINALL: I object to the question if it is proposed to ask what the man did say. Of course, I cannot object to his being asked if the man spoke, but I object to any question which purports to ask him what the man said. In the first place, it has not been proved that this man was a servant of the gas company, and, secondly, if he was, he was not an agent to make statements or admissions.

After some conversation on the point,

The SOLICITOR-GENERAL said: If there is any question as to the man being a gasman, I can clear that up.

His LORDSHIP: I think you had better clear that up first.

William Sharp, a stage constable, was called, and examined by Mr. POPE: He said that about three o'clock in the afternoon of the fire he was standing at the Woodside gangway, in the centre of the embayment, when one of the gas-fitters came running up to him. He had known the man as working on the stage before as a gas-fitter. It was the same man who went up with him to Mr. Lyster and Mr. Chaffers.

Mr. POPE: As he came running up to you, did he call out anything to you?

Witness: Not until he came to me.

Mr. POPE: Now, I propose to ask him what the man said as soon as he came up to him.

Mr. ASPINALL: I object again.

His LORDSHIP: Not on the ground that he was not a gasman. I suppose you object now because he was not an agent to make admissions, and that it is not part of the *res gestæ*.

Mr. RUSSELL: If it is to be put on the *res gestæ* ground, whatever that is, the statement of any man on the stage might equally be admissible, and that would be an argument *reductio ad absurdum*.

The SOLICITOR-GENERAL: Surely, if it was a statement made at the time of the fire, or immediately afterwards, it would be part of the *res gestæ* which my friend pretends not to understand. The rule is clearly laid down in "Taylor on Evidence," and I contend that the circumstances connected with the transaction are admissible. Supposing a collision took place between two vessels, and just at the time the man at the helm sings out something, would not that be evidence? Or if a coachman, when driving a coach, came into collision with another vehicle, and exclaimed at the time, "Good heavens! I am on the wrong side," surely that would be admissible?

His LORDSHIP said he would consult Mr. Justice Archibald, who was presiding in the other court. The question of the admissibility of the evidence was a most important question, because, if it was improperly admitted, there would be a new trial, and if it was improperly rejected there would be a new trial. He should, therefore, like to consult his brother Archibald. [His lordship then left the bench for the purpose of consulting the learned judge in the other court.] On his return he asked the witness: Were any other persons doing any work—any gas-work—on the stage except for the defendants company?

Witness: Not that I am aware of.

Mr. ASPINALL: If my friend had asked that question, I should have suggested that it was rather leading.

Mr. RUSSELL: Brassey's men were in possession.

The SOLICITOR-GENERAL: Brassey's men are not gas-fitters, and there is no other gas company in Liverpool that I know of except the defendants.

His LORDSHIP: I have consulted my brother Archibald on this point, and he agrees with me in the impression that I shadowed forth before I went out of court just now. I think the question must be looked at in this way. The suggestion is that, somehow or other, while the gas company's men were at work upon the stage, the lighting having commenced on the 23rd of July, a statement was made by one of the servants of the defendants immediately about and at the time of the conflagration. I shall hold that such a statement is evidence, and therefore I shall admit it—of course, for what it is worth.

Mr. POPE (to witness): You told us that the gas-fitter came running to you when you were standing at the Woodside gangway on the stage. What did he say to you when he ran up to you?

Witness: He said, "Oh, my God, get a bucket." I asked him the reason why, and he said he was doing a joint, when the main had taken fire. We then ran for buckets, and on the way met Mr. Lyster and Mr. Chaffers, and I told them what had happened. The gasman returned with me about as far as the middle of the embayment, and then I saw no more of him.

Mr. POPE: Did you see the same gasman on the stage afterwards?

Witness: No, but I have seen him since.

By Mr. ASPINALL: The man who came up to me was in a very excited state. It was when I was going with the empty bucket, before I filled it, that I first saw the smoke.

Mr. *Richard Chaffers* was recalled, and, in reply to the SOLICITOR-GENERAL, said that when he got to the man-hole, and saw the smoke coming up, he saw the gasman again. The man seemed very much excited. He moved his hands about, and said, "Whatever shall I do? It's me, it's me." Witness asked him if the gas was turned off, and, on his replying that it was not, he told him to turn it off.

In cross-examination by Mr. ASPINALL, witness said, when persons went down the man-holes, they ought to have closed them up after them for the safety of passengers.

Mr. *G. F. Lyster*, recalled by the SOLICITOR-GENERAL, said that the man who came up to him, and whom he described and believed to be a gasman, seemed to be very much excited. He said, "Oh, my God, the stage is on fire. I did it. I am a ruined man." He tried to get an explanation, but the man disappeared immediately afterwards. It was very usual to creosote the timber used for stages and such purposes. He had very largely directed it to be done in Government works and otherwise. The quantity of creosote which was injected into the timbers of the landing-stage was the same quantity that he had injected into timber for Admiralty works at Holyhead. He had injected creosote into timber at the rate of 10 lbs. to the cubic foot. The object was to protect it from dry rot.

In cross-examination by Mr. ASPINALL, witness said he did not know whether the 6-inch main was connected with the stage or not. He did not know whether the lamp in the centre of the bridge of the embayment drew its light from the 2-inch main in the stage or not. He knew that the others did.

By the SOLICITOR-GENERAL: He never interfered as a rule with the lighting arrangements.

John Furness, examined by Mr. POPE.

Witness said he was a foreman carpenter at the Mersey Docks landing-stage. At the time of the fire he had six men working at the stages under him. They were all working on the south side of the embayment bridge. Five of the men were filling a pontoon, and the other was putting a scupper at the foot of the bridge. Some days before the 28th, the stage was lighted, but the gas-fitters were at work making permanent the connexions, which had only been temporary. A pipe was laid down the north quarter of the embayment bridge from the 6-inch main on the Prince's parade; but he could not tell whether it was connected with the 2-inch main on the intermediate stage or not. He knew that there were stop-cocks at Nos. 2 and 3 bridges of the Prince's stage, but there was no stop-cock at the top of the embayment bridge. On the 28th of July, shortly after three o'clock, he was standing near Mr. Lyster, at the southern end of the embayment, when he saw smoke coming up one of the man-holes and through the lamp-post at the north-west corner of the embayment. He at once ran towards the man-hole, and as soon as he got there he saw a man coming from below through the man-hole. He knew him as one of the gasmen working at the stage. He appeared excited. Witness asked him what he had been doing, and he replied that the plug had slipped out and the stage was on fire. It was not the same man who went with Sharp for a bucket. The man asked him to take him to the man-hole in the centre of the Prince's stage. He lifted the hatch for him, and the man went down, but he returned in about a minute, and they both went back to the south and found the stage on fire. Whilst they were going back, witness saw Walker and Richardson, two gasmen, lifting the flags on the parade at the top of No. 2 bridge.

Cross-examined by Mr. RUSSELL: Witness said he did not in any way interfere with the laying of the gas-pipes, or with the gas company's men in their work. Brassey's men were working 500 feet to the southward of the man-holes. They had finished the work to the north of the embayment, and moved their plant and materials to where they were then working. Sometimes there had been reports about the escape of gas before the fire, and occasionally the gas was kept alight in the stage master's office. The gas was always on on the intermediate as well as on the Prince's stage, and they could at once light it for any temporary purpose. What they were making permanent on the day in question was the pipe between the lamp and the 2-inch main. The first thing the man said was that the plug had slipped out, and that the stage was on fire.

Mr. *J. D. Lewis*, a commission agent, residing at Liverpool, said that on the day of the accident he was standing near one of the man-holes, when he saw smoke coming from it and out of the top of a lamp-post. He saw a man getting through the hole with a pair of gas-tongs and a hammer in his hands. He put them on the deck first, and then picked them up. Witness assisted him to get out, and a boy came up after him. On looking down the hole he observed a great quantity of smoke and a flame approaching. He asked the man how it had happened, to which he replied that the plug had come out of a joint in the main, and his candle had set it on fire. Witness asked him if there was anybody else down below, and he answered in the negative, adding that his mate had gone to turn the gas off. He appeared very much excited, and went up the embayment bridge. Shortly afterwards great volumes of smoke and flame came up from the man-hole.

J. Ashworth and *R. Smith*, two foremen in the employ of Messrs. Brassey, deposed that none of the men working under them on the day of the fire were employed north of the junction of the stages.

Mr. *George T. Hall*, examined by the SOLICITOR-GENERAL.

Witness deposed that he was a gas engineer, and had had large experience. He had been for 17 years gas engineer to the Corporation of Salford. Assuming that he had to make a connexion with a main charged with gas in a confined situation, he should by all means turn the gas off if there was a stop-cock, but if there was not a stop-cock he would use a bladder or bag—that is, make a hole at the top of the main, put a bladder through, and fill the bladder with air. This, by means of a small top-tap, made a temporary valve, and prevented the gas from escaping. This was the usual precaution to take; it was a well-known process, and was generally adopted by them. The men in his employ were always supplied with these bladders, or india-rubber valves. He never used wooden plugs, but always wrought-iron ones, which were the only safe kind of plugs for gas purposes.

In cross-examination by Mr. ASPINALL, witness said, as a rule, the bladdering process was very seldom used where wrought iron was concerned, as wrought iron was so difficult to drill. In this case he should have applied the bladders to the chief main in the street, which was of cast iron. The process of bladdering involved a slight escape of gas. It was easy to put out a flame, even from a 2-inch main, if a man had presence of mind. He had put out such a flame by placing his hand at the mouth of the pipe. He had seen men running away from such a flame, frightened.

Re-examined by the SOLICITOR-GENERAL: Had he been making any sort of connexion underneath the landing-stage, he should have had the gas turned off. He had never been under the stage.

Mr. *John Lee*, examined by Mr. POPE.

Witness said he was the keeper of the Exchange Buildings, and was formerly a gas-fitter. He served his apprenticeship with the defendants, and remained with them some time after his apprenticeship expired. He assisted in fitting the gas at the George's stage when it was first put on, and had since worked at the George's and the Prince's stages. When connexions were made or breakages repaired, it was the practice always to turn the gas off at the top of the bridge.

Mr. ASPINALL: Supposing you had only to take a plug out and put another in, would you turn the gas off for that?

Witness: Certainly.

Mr. ASPINALL: Did you ever do that?

Witness: Yes, frequently.

Mr. *W. T. Callow*, examined by Mr. POPE, said he was a gas and water engineer, in the service of the Birkenhead Improvement Commissioners. He agreed entirely with the evidence given by Mr. Hall. Before making a connexion in such a position the gas ought to have been turned off.

Mr. *Martin Murphy*, examined by the SOLICITOR-GENERAL.

Witness said he was an analytical chemist. Wood creosoted with 10 lbs. per cubic foot would not give off inflammable vapour at any temperature less than about 360° Fahr., at which the wood would be carbonized. That had reference to wood exposed to the air. From his experience the creosoted wood under the landing-stage would not be more inflammable than ordinary wood. If creosoted wood once got on fire it would burn with greater intensity than ordinary timber.

In cross-examination by Mr. RUSSELL, witness said he did not know anything about the internal construction of the landing-stage. He knew nothing of it at all except as an ordinary traveller across the river. Superior creosote oil would not distil in a retort at a temperature of 360°. Creosoting might take place without the oil being heated. Properly creosoted wood would not sweat in ordinary July weather.

This was the case for the plaintiffs.

Mr. ASPINALL then addressed the jury for the defendants. He said he would not trouble his lordship with any legal questions which might arise, the defendants being of opinion that the proper course to take was at once, and without further delay, to lay before the court all the facts so far as they knew them, to give the jury the benefit of such scientific observations as might be made on those facts, and then to leave them to form their own opinion upon the question. He had only to complain of one thing in the statement of the Solicitor-General, and that was his remark that the gas company had been applied to for information, and did not give it. He defied his learned friend to prove that one single interrogatory had been refused by the defendants to the plaintiffs, or to indicate that the gas company had not fairly met the Dock Board in a manner which was consistent with two such great trusts. It was imputed that the defendants, by their negligence, had brought about this

accident, that they had negligently allowed the gas to escape and caused it to ignite. The defendants, however, maintained that they had not allowed the gas to escape, either from their pipes or mains, and that they had not, through their servants, ignited any gas which did escape. This they would prove by demonstration, not only by reliable evidence, but by the very facts spoken to by the plaintiffs testimony. The Solicitor-General said that the facts spoke for themselves in this case. He (Mr. Aspinall) said the same thing, and he would ask the jury to say whether the evidence did not speak for itself, and show that the accident could not have arisen from the ignition of gas at all. It could not have been expected that either the gasmen who were sent to do this work, or that anybody in the gas company's office, would have any idea that the enormous mass of timber constituting the great structure of the stage was in a highly inflammable state, newly creosoted as it was. Did Mr. Lyster know that the wood which he had saturated with creosote was inflammable? If he had, what would the jury have expected him to do? Why, would not it only have been fair of him, if he had known it, to have informed the foreman gasman, and given him some caution as to his manner of dealing with wood in that condition? If Mr. Lyster knew that the wood was more in danger of taking fire than ordinary timber, would it not have been criminal wickedness on his part to have withheld such information from gasmen who had to go amongst it with lights? But it was only reasonable to presume that neither Mr. Lyster nor any human being connected with the Dock Board had the least idea that it was possible, in any ordinary way or by ordinary means, to set fire to such a construction. He would ask the jury to come to the conclusion that neither the engineer nor anybody else in the employ of the Dock Board did think about the timber being of an inflammable nature; and therefore the jury could not come to the conclusion that it was the duty of the officials of the gas company to have that idea either. The servants of the company were sent by the Dock Board to do work upon the landing-stage, which they had every reason to think was as little liable to catch fire as ordinary timber of the same size and appearance, while in reality it really was infinitely more dangerous, because from the mode in which the oil was injected into the wood it was almost as inflammable as tinder. They could perceive this from the extraordinary rapidity with which it burned. Hence, if such was the fact, the jury must consider what would be negligence on the part of servants who were obliged to work amongst wood of this description with lights in their hands. It was true that on the morning of the 28th the men were collecting some piping to utilize it for the new connexion, and that it was necessary to take out the bend and plug the opening. He believed for that purpose the gas was not turned off, but it was utterly unnecessary that it should be done; and he was quite certain that nothing which occurred there or to that part of the pipe had anything whatever to do with the unhappy accident. The facts of the case were these: one of the gasmen named Ledson and a boy named Pennington were working on the pontoons. The man put his lamp upon the keelson, and his attention was attracted by the reflection of a light. He looked up, and then saw what he described as a cake of fire adhering to the roof. There was no explosion whatever, and no flame attaching to the gas-pipes; no fire coming out of the bend or any part of the main such as would have indicated a leak or anything of that kind. There was nothing but this curious cake of fire against the roof, which had disappeared by the time he got up to it. He called the boy, and gave him some wet tow, telling him to follow up the light, and put it out. The apprentice was unable to do it, and he himself saw no fire in the chamber itself. This witness would adhere in the strongest possible manner to the statement that there was no gas lighted at all, and no escape of gas. From the evidence of other witnesses, and from the facts which were patent to every one, it was perfectly plain how the affair had originated. The newly creosoted wood on each side of him had been exuding naphthaline vapour. That vapour, which had been confined in the timber, communicated with the oil itself, and in that way the timber caught fire, and burned with a velocity unheard of before. If the fire was caused by an escape of gas there must have been an explosion, or such a flame as must have been easily perceived, and yet neither one nor the other had been spoken of by any of the witnesses who came from underneath the stage. He did not dispute the testimony of Mr. Murphy as to the operation of the creosote on the timber, but, on the other hand, he would call evidence to prove from actual experiments that this sort of material would exude vapour of naphthaline, and if the fire was caused in that way the defendants were clearly not liable. As to what the gasman said when he ran on deck, he anticipated that the man would, to a great extent at all events, agree with the witnesses for the plaintiffs as to what he said; and in the excited condition in which he was at the time, it was perfectly natural that the man's first impression should be that there must be something the matter with the gas; but it was also perfectly reasonable that, dealing with facts, he should now be of a contrary opinion. He (Mr. Aspinall) would prove, he believed to the satisfaction of the jury, that the fire could not have originated through an escape of gas, by the negligence of the defendants servants, but must have originated in some other way.

George Ledson, examined by Mr. RUSSELL.

I am a gas-fitter in the employ of the Liverpool Gas Company, and I have been between nine and ten years in their service. During that time I have had large experience in the various branches of the business. I was one of the men who was sent to do part of the work in connexion with the landing-stage, and an apprentice, named Andrew Pennington, a youth of about 18, was told off to assist me. I had been working at the stage three weeks before the 28th of July. On the latter day I was working there as early as six o'clock. The connexions were perfectly safe, and there was no smell of gas. Before I put in the plug, whilst disconnecting a piece, there was a very slight escape of gas, but that we are always prepared for, and there was no danger whatever in it. After breakfast I brought Pennington with me to the stage. I went down one man-hole, and he descended another. That was so that I could unscrew on one side of the keelson, and he could put the plug in the bend on the other side. I undid the connexion, and saw the apprentice screw the plug immediately into the bend. I then went up the man-hole, and got into the one in which Pennington was, where the 2-inch main ran. I unscrewed the bend out, and by that time my assistant had a plug ready to screw in. It was done properly and left secure. It was screwed up and lined with white lead, as it was intended to be permanent. No gas could have escaped from it. Up to this time I did not know that the timber was creosoted, or that there was anything which made it inflammable.

SATURDAY, AUG. 21.

George Ledson recalled, and examined by Mr. RUSSELL.

After taking off the temporary service-pipe to the lamp, and fastening, with a pair of inch tongs, a plug in the place where the temporary service joined the 2-inch main, witness and Pennington measured the length of pipe they wanted to connect the bend in the 2-inch main with the lamp, and then went to the hut at the Prince's Dock, where the stores and tools were kept. When they were doing the work he had described, he thought, from what he felt in taking the temporary plug out, that the gas must have been on. Pennington and he went to the hut and prepared the connexions. They went down to the stage shortly after two o'clock. He then sent Pennington to get some tow. He went down to the south end of the intermediate stage for two pairs of tongs which had been left underneath the stage, where they had been last used. By the time he had got them, Pennington had returned, and they met on the stage. He went down the west man-hole about a quarter to three o'clock, three hours and three-quarters after the time he had last been down, taking down with him the pieces of iron-piping he had been cutting and making screws in. He had left his working lamp on the keelson when he went away in the morning, extinguished, near the T-piece in the 2-inch main. He lighted it and put it slantwise on the keelson, to show a light to Pennington as well as to himself. The flame of the lamp was 2 feet 6 inches or 2 feet 9 inches from the end of the bend. The first thing he did was to put a loose screw plug in the end of the first length of pipe he was going to put in the bend, to keep the dirt out and the screw clean. He was then proceeding to red lead or white lead the thread that he was going to put into the bend, and whilst he was in a stooping position doing so he saw a sudden flare reflected on the pontoon.

Mr. RUSSELL: Had anything whatever been done either to the permanent bend or the old temporary connexion, or had anything been done to the bend which was intended to begin the new and permanent connexion from the time you left it in the morning?

Witness: No; they were in the same state as when I left them.

Mr. RUSSELL: And at that time had you in any way interfered with the position of the bend, and the plug in it, in order to make your connexion?

Witness: No.

Mr. RUSSELL: When would have been the time at which it would have been necessary to have done anything to the bend with the plug in it?

Witness: I might say in two or three minutes afterwards I should have been ready to make the connexion.

Mr. RUSSELL: This being a permanent connexion, what would you have done in the ordinary course before you made this connexion?

Witness: With so many connexions to make, and with a length of piping like that, I should certainly have had the gas off. Pennington would have turned off the gas at the stop-cock at the junction with the Prince's stage and the intermediate stage. It was in the same avenue that Pennington was, and about 30 or 40 feet off.

Mr. RUSSELL: How long, after you had placed the lamp on the top of the keelson, and you had been going on working, before your attention was attracted by the sudden flare?

Witness: Close on to ten minutes.

Mr. RUSSELL: Being attracted by this light, did you turn round?

Witness: I just looked up towards my left, still stooping, and saw a blue flame underneath the Baltic deck. The nearest part of the flame to me was over my lamp. It was nearer a square flame than a round one, and the side of the square would be about 18 inches long. It was flat against the Baltic timber. On seeing the flame, I took up some tow off the pontoon and dipped it in the river, and dabbed the timber with it. There was no flame whatever from the bend. If there had been a flame from the bend there would have been no difficulty in stopping it. I could not have helped seeing it, as it would have reached past my face. I stooped a second time to wet the tow, and when I came back to dab the flame again it was out of my reach. It went direct across the top of the keelson towards the 2-inch main, and still adhered to the Baltic timber flat to the bottom of the deck. Its progress was from west to east, and, finding the flame had got beyond my reach, I threw wet tow to Pennington, who was on the other side of the keelson. The flame was a flickering one. By the time it got over the other side of the keelson I saw smoke, but very little. I saw Pennington dab against the timber as I had done, but he could not manage the flame. At this time I noticed a kind of oozing noise, and I then proceeded to get to the other side of the keelson by going up the third man-hole and down the second, were Pennington was, and told him to go and see if the gas was off. By this time it was getting very hot. I dipped my coat in the water, and then dashed it against the Baltic deck, between the two beams, and did all I could to try to put down the fire, but did not succeed. The smoke was now so black that I could not see, and it was of a choking kind. When Pennington got to the stop-cock I called out to him, and he replied, "It's off." I could stop down no longer, and came up nearly suffocated, and in an almost fainting state. I was very excited at the time. I did not know anything about the wood being creosoted, or if creosoted that it was dangerous. I noticed that it had a very strong smell, and when I was working below and drove in a spike in the beams I noticed that some liquid squirted out. I do not know what it was. If these had been ordinary beams I have no doubt whatever there would have been no danger from putting my lamp on the keelson as I did. When I got up from the man-hole the first time I looked about for assistance; and I was also uneasy about Pennington, whom I had not seen. Before I got down again I found one of the stagemen—I think it was Sharp—and after speaking to him I ran to the engine-house. I do not recollect what I said to Sharp. The engine-house was locked, and I went knocking about the stage trying to find somebody who could get me the key. I then returned to the second man-hole, where, for the first time, to the best of my knowledge, I saw Mr. Lyster. He asked me as well as I can remember who I was, and I told him I was from the gas company. He asked me if there was anybody down below, and I said "Yes," alluding to Pennington. He told me to go down and see if I could not get him up, and I then went down again and called out, but got no answer from Pennington. I was pulled out of the man-hole, and I then came across Furness. I do not recollect anything else I said to Mr. Lyster. I have heard what has been said by Mr. Lyster and others, and do not say that it is not so, but do not recollect beyond what I have told you. Furness went to the engine-house with me, and I went down the man-hole there and called out for Pennington, who replied and came up with me. At none of the times when I came up had I a pair of tongs and hammer. After we came out of the engine-house Pennington and I went up the south bridge of the Prince's stage, and by this time the fire was blazing.

Cross-examined by the SOLICITOR-GENERAL: I never in my life heard of timber being creosoted. There was no pipe laid down the bridge of the embayment. I noticed the timber had a very stong smell, and must have known something had been done to it, or it would not have been of the colour it was. I cannot say I generally put the lamp on the keelson. I only put it where I wanted the best light. We do not usually take a boy with us to hold the light. In answer to further questions, witness said that when the pipe was cut to make the permanent connexion the gas was off, but he did not know that until the pipe had been cut. He was not the workman in charge there at the time, and did not know who turned the gas off. Had it been on there would have been a great escape of gas. On the day of the fire he did not turn off the gas himself, and he had no reason to believe it was. They always used metal plugs in working at the stage.

The SOLICITOR-GENERAL: When you saw the flame at that time you thought it was the gas that was on fire?

Witness: Not knowing the nature of anything which was about, I put it down to the gas.

That was your first thought?—It was.

His LORDSHIP: You mean the gas from the mains?

Witness: Certainly.

The SOLICITOR-GENERAL: You know you had not much doubt about it, then; at least, you thought you had not?

Witness: It was my first thought?

That is what you said when you came up?—I do not know what I said when I came up.

Do not you remember saying, "Oh, my God! the stage is on fire. I did it?"—Certainly. I could not get out of it, in a manner of speaking, because I naturally thought it was gas; and if I said so, I said so thinking it to be gas.

His LORDSHIP: "When I came up I naturally thought it was from the gas"—may I say that?

Witness: Yes.

The SOLICITOR-GENERAL: And you might have said, "Oh, my God! the stage is on fire. I did it. I am a ruined man?"

Witness: It is quite possible.

If Mr. Lyster says you did, you would not be prepared to contradict him?—I would not—I could not contradict him.

Did you say to Sharpe, "Oh, my God! where is there a bucket?"—I don't remember what I said. I might have made an exclamation to him.

Do you remember his asking to you why you wanted the bucket, and you replying that you were doing a joint and the main had taken fire?—It is quite possible that I may have said so.

Did you say to anybody that the plug had come out of the main and your candle had set it on fire?—I cannot say.

Will you swear you did not say so?—No, sir, I won't; but I am satisfied the plug did not come out.

Did you tell Lewis that your mate had gone to turn the gas off?—I don't know.

Did you say to Furness that the plug had slipped out, and that the stage was on fire?—I might have said so, but I am not conscious that I did.

Tell us what you thought at the time?—I don't know about that.

Will you swear you did not think that the plug had slipped out when you said so?—Yes, sir.

His LORDSHIP: Then what did you send Pennington to turn the gas off for?—I did not say, "Go and turn the gas off," but said, "Go and see if the gas is off." You can't depend on those plugs when the pipes get hot.

How did you suppose the gas had come out if the plug had not slipped?—I can't say how I thought the gas had escaped, but the plug could not have come out.

The SOLICITOR-GENERAL: If you said that the plug had slipped out, did you not think so?—No, sir.

His LORDSHIP: Lewis and Furness both say you mentioned that the plug came out. Now, at the time you said that, was it passing through your mind?—If I said so, it must have been an impression upon my mind.

The SOLICITOR-GENERAL: I suppose you are now convinced that the vapour from the creosote came on fire?—I am not at all convinced.

When did you first learn anything about the vapour of creosoted wood?—I have not learnt it yet.

Have you spoken to Mr. King, the gas company's engineer, since the accident?—Yes; a few days afterwards I was spoken to by Mr. King about the nature of the creosote. He asked me if I knew what the wood was soaked in, and I said "No." He then told me it was soaked in creosote.

Did he ask your ideas of the cause of the fire?—I gave him my verdict on the same evening.

The SOLICITOR-GENERAL: A verdict of "Not guilty."

His LORDSHIP: Your notion, you mean?

Witness: Yes, sir.

The SOLICITOR-GENERAL: You are still in the service of the gas company?

Witness: I am.

Re-examined by Mr. RUSSELL: If this fire had not taken place I should have told Pennington to turn off the gas before proceeding to attach the piping to the permanent bend. Pennington would have nothing to do to the bend, nor would he have any occasion to unscrew the plug until I gave him orders, and I had given him no orders to do anything. If there had been any escape of gas from the bend, or the end of the bend, my lamp must have ignited it immediately I put it there, and nothing of the kind ever happened. Assuming the screw-plug to have dropped out, and assuming the day pressure to be 9-10ths against 25-10ths at night, if the gas had taken fire the flame would have been from 2 feet 6 inches to 3 feet long. There never was at any time such a flame, and if there had been there would have been a report.

His LORDSHIP: You said that, not knowing the nature of anything about, you put the fire down to the gas. What did you mean by that? Your impression was that it was the gas?—I had no reason to think anything else.

Does it sometimes happen that men will get light from the end of a bend?—Not in a place like that. I have known it done, but a tap was always put.

But supposing a man wanted a little extra light for a short time, would he get it in that way? It is very wrong, I suppose, but might it be done?—It could be done, and could be put out without any danger.

His LORDSHIP: You say that nothing of that sort was done here?—Yes.

Andrew Pennington, examined by Mr. RUSSELL, said he was an apprentice in the service of the defendants, and was working with Ledson on the day of the fire. Whilst Ledson was on the other side of the keelson, witness did not in any way interfere with the bend or with the screw-plug in the end of the bend. He would have no business to do so until he got directions from Ledson. The latter would be going on preparing the pipes for about ten minutes or a quarter of an hour before his attention was called to the flame. The flame was a kind of flickering one, and was towards Ledson's side of the keelson. When he turned round, when his attention was called to the light, he had a full view of the bend, and there was no light coming from it, nor from any part of it. If there had been any flame from it he must have seen it. The plug was not out, and if it had been there must have been a great flare of light. When he went to the stop-cock to see if the gas was off, the place was dark; but he could feel from a "nick" in the stop-cock that it was not on. Whilst working below the stage he noticed a moisture coming out of the beam when a nail was driven in. He did not know how that had been occasioned, nor did he know anything about the wood being creosoted. He did not believe the gas was on when they were taking off the temporary connexions. As far as he was concerned, he had not turned the gas off or on that day. He would not swear it was not on, but he did not believe it was.

Cross-examined by the SOLICITOR-GENERAL, witness said: I did not know that the timber was soaked in anything to preserve it. Between ten and eleven o'clock, when I was putting in a plug, I don't think the gas was on. I don't know who turned it off. I never remember putting a lamp at all on the keelson before this day. I did not tell anybody how the fire happened. I was asked how the thing happened by Mr. King, who told me the wood was creosoted. He wanted to know if liquid came out of the timber when a nail was driven in, and I replied "Yes." I said the wood was black and smelt strongly. He then told me that creosote made the wood inflammable and burn quickly.

Re-examined by Mr. RUSSELL, witness said if there had been any escape of gas the lamp must have set it on fire at once. He had never known the gas people taking out a connexion and putting in a connexion into a 1-inch pipe leading out of a 2-inch main with the gas turned on.

Thomas Walker, gas-fitter, said a few days before the fire, he was sent down to put in the bend in the permanent connexion, which was done and everything properly fixed and secured. The plug was red leaded and screwed up with a pair of tongs, and the gas was turned off before the work was begun. He knew nothing about the timber being creosoted.

Cross-examined by Mr. POPE: The timber smelt like paraffin.

Mr. POPE: What is paraffin?

Witness: I don't know.

Mr. POPE: Do you mean to say you don't know what paraffin is?

Witness: I know what paraffin oil is.

Mr. POPE: Don't you know that paraffin is inflammable?

Witness: Of course, when it is in a liquid it is inflammable.

Mr. POPE: Don't you know that paraffin gives off a vapour?

Witness: No, I don't. I know a wick soaked in paraffin oil would burn.

George Cummins, a gas-fitter, said he had been in the employ of the defendants upwards of 26 years, and was present three or four days before the 28th of July, when the permanent bend was put into the 2-inch main. He turned off the gas to the northward before the coupler was cut, and saw the bend put in. The other end was plugged up with a screw plug, and it was left quite safe. No hand could unscrew the plug. There was no pipe from the 6-inch main connected with the stage.

Cross-examined by the SOLICITOR-GENERAL: He turned the gas off when making connexions. It was not prudent to work with the gas on.

The SOLICITOR-GENERAL: After you had turned the gas off, do you remember turning it back again?

Witness: Not till it was time to turn it on again at night.

The SOLICITOR-GENERAL: But at night, when it was time to turn it on, you did turn it on again?

Witness: Yes.

The SOLICITOR-GENERAL: And left it turned on?

Witness: That was after all was completed.

The SOLICITOR-GENERAL: And the stage was lighted every night until the fire?

Witness: Yes.

The SOLICITOR-GENERAL: As a rule, unless there was some work going on, the gas was always on?

Witness: Always, as a rule, as long as there was nothing going to be opened in a large way.

The SOLICITOR-GENERAL: Nobody interfered with it?

Witness: No.

Robert Meharry, another fitter in the employ of the gas company, said he had charge of the work which was being done at the stages, in the absence of Mr. Richard Walker, the foreman. He gave directions with respect to the permanent connexion to the lamp at the north-east corner of the embayment. On the day before the fire, he saw that the permanent bend had been put in, and the plug screwed up and leaded in its place. The 6-inch main had not been connected with the stage in any way.

In cross-examination, witness said he did not know that the beams of the stage had been creosoted, or that anything had been done to them.

The SOLICITOR-GENERAL: Will you swear it never occurred to you that anything had been done to the wood?

Witness: I will most distinctly; it never did.

The SOLICITOR-GENERAL: Will you swear that you never perceived an odour from it?

Witness: There was an odour, of course. It had a nasty sickening smell, but I thought it might be the smell from the wood itself.

Richard Walker said he was foreman of the gas-fitters, and had been in the service of the defendants for 32 years. He received his instructions from Mr. Lyster as to the lighting of the intermediate stage on the 8th of July, and he promised that the work should be proceeded with as quickly as possible. He and the manager selected the most experienced men for the work. He did not know that there was anything specially dangerous in the character of the woodwork of the stage. He knew that it was steeped in some composition, which he afterwards learned was creosote, to protect it from rot. Neither Mr. Lyster nor anyone in his office told him anything about it, or gave him any warning.

Cross-examined: He knew that it would take fire more easily than ordinary wood, but he did not give any special caution to the men who were working near it with lights. There was no connexion between the 6-inch main and the stage by the bridge leading to the embayment.

Mr. *T. W. Keates*, examined by Mr. ASPINALL.

I am consulting chemist to the Metropolitan Board of Works, and superintendent gas examiner to that board. I have practised as a chemist for 23 years, and acted for the Government at the time of the great gun-cotton explosion at Stowmarket, and also at the explosion in the Regent's Park. I have heard the evidence given in this case, and have come to the conclusion that if the plug had slipped out of the bench at the time Ledson's lamp was lying on the keelson the gas would at once have become ignited, and an enormous flame have been produced. The flame would have been a very long one, depending upon the amount of pressure in the mains. With an inch pipe and a pressure of about 8-10ths or 9-10ths, the flame would be at least 6 feet long, and I think it might be 8 feet. I made the experiment this morning, and the width of the flame at the end was between 2 and 3 feet. If a man had been standing in front of it he would have been killed. It was not only impossible that a man should have been there and not have seen it, but that he should have been there and lived if the plug had come out and the gas ignited. The quantity of gas which would escape would be equal to what would supply 250 or 300 street lights.

Mr. ASPINALL: Supposing there had been a leakage of gas going on for some time in any part of the bend or pipe within or near the chamber between the keelson and the deck, and that had taken fire, what would have been the effect?

Witness: The effect would depend, of course, very much on the extent of the leakage. If there had been a small quantity of gas accumulating there would have been a flare of light, and the flame would have been very evanescent.

His LORDSHIP: What size of bore in a pipe would carry gas at 8-10ths pressure a distance of 3 feet?

Witness: I should think a quarter of an inch bore, perhaps rather more.

His LORDSHIP: Supposing there had been a leak of a quarter of an inch, with 8-10ths pressure?

Witness: That would be a very large leak.

His LORDSHIP: But supposing there had been a leak of that kind?

Witness: One of two things would have happened. Either the gas would have mixed with the air, and you would have had an explosive mixture; or——

His LORDSHIP: Supposing it came out gradually?

Witness: I think, in that case, you would probably have an explosive mixture formed.

His LORDSHIP: You mean that if the gas came out of a ¼-inch pipe you would have an explosive mixture?

Witness: I think you would.

His LORDSHIP: And although you could have a flame of gas extending in length from 6 to 8 feet out of an inch bore, you could not have a flame of gas coming out of a ¼-inch bore without an explosion?

Witness: I do not think you could; and, in the same way, if you had the gas issuing from the large orifice you would have an explosion.

His LORDSHIP: Do you mean to say you could not have a volume of gas coming out gradually without an explosion?

Witness: I hardly think you could.

In further examination, witness said that in the case of either the larger or smaller flame, most certainly each must be visible, and in the case of the larger one, to people at a considerable distance off, where there was only a small quantity of gas present, ignition might take place without explosion. This would be where the proportion of gas to air was less than one in nine. There would be a mere flash of flame, which would burn itself out in a moment. He did not think there would be such a flame as would ignite anything—even timber in the most dangerous state they could imagine.

MONDAY, AUG. 23.

Mr. *Keates* recalled, and further examined by Mr. ASPINALL.

When the mixture of air and gas is less in proportion than one in nine, there would be no explosion, nor would there be explosion where it exceeded one in five or so. If there was a mass of unexplosive mixture of, say, one in three,

there would be a point between that and the external air at which it would explode.

Mr. ASPINALL: If there was an accumulation of gas in the chamber between the keelson and the deck sufficient to ignite or explode, do you think it possible that a candle could remain there for five or ten minutes without an explosion?

Witness: No, not five seconds. It would take fire or explode immediately.

Mr. ASPINALL: In the case of a quantity of gas not sufficient to cause explosion, but capable of being ignited, do you think it possible that instantaneous fire, as you describe, would set fire even to wood impregnated with creosote oil?

Witness: No, I do not think it would. I do not think the explosion, or even ignition of gas, would do that.

Mr. ASPINALL: In the case of a quantity of gas not sufficient to cause an explosion, but still capable of being ignited, do you think it possible that the instantaneous escape of such a quantity would set fire even to wood impregnated with creosote oil?

Witness: No, it would not. Creosote oil, which is used to impregnate wood, is an admixture of carbolic acid with inflammable oil and solids, the latter being principally naphthaline.

Mr. ASPINALL: Is creosote itself at all so inflammable as creosote oil?

Witness: No, not by any means. I have made some experiments with regard to the inflammability of creosote oil, and find that it gives off an inflammable vapour which ignites at 188° Fahr., and the surface of that oil takes fire at 194° Fahr. I have heard that this particular fire took place on the 28th of July, and, having regard to the temperature in the chambers of the stage, I consider there would be a tendency for oil to exude from wood saturated with creosote oil, and that such wood would very readily take fire. The cellular construction of the inside of the stage would favour the retention of any vapour that arose from the wood. In hot weather there would be a greater tendency for the oil to exude than in cold.

Mr. ASPINALL: What is your opinion as to the heat at which this vapour, when mixed with air, is inflammable?

Witness: I could hardly tell you that. I have made some experiments as to the temperature which could be produced in a chamber, 2 feet wide, 3 feet long, and 14 inches deep, by the lamp placed in the position described by the witness Ledson, and I find that in eight minutes the temperature immediately over the flame of the lamp had risen to 208° Fahr., and in eleven minutes to 220°. My experiments took place in a room, and there was no air coming from below, the bottom being, in fact, the floor of the room. I do not think the spaces in the avenues between the beams, nor the space between the pontoons, would have anything to do with the circulation of air.

By the JURY: I do not think the coming and going of the *Woodside* and other steamers to the intermediate stage would in any way affect the circulation of the air in those spaces between the beams and the keelsons; that is, it would have no effect on the temperature caused by the lamp; nor would the lower surface between the pontoons—viz., water, deflect the flame. The agitation of the water produced by the steamers would not cause the flame to vibrate from its upright direction. I do not think the rising and falling of the pontoons would affect the flame in such a large stage. In such a chamber the vapour from the timber would ignite, would then communicate with the oil, and then the flame of the burning creosote would set fire to the wood.

By his LORDSHIP: The flame of the burning vapour would be blue, lambent, and fitful, without smoke, but after the wood was set on fire there would be an intensely thick, black smoke. In my opinion the flame from the lamp placed on the keelson as described by the workman would not affect the Baltic timber above. I have made some experiments with creosoted wood, and find that such wood in a retort, at a temperature of about 130°, gives off oily vapour. It could not be got at a temperature of less than 120°, and then only very little, if any. In a chamber contrived between the beams, the vapour would be continually diffused and lost. I do not think that a summer temperature could produce such a vapour; but I think the flame of the lamp would produce a vapour, and that it would then ignite.

Cross-examined by the SOLICITOR-GENERAL: Creosote is a liquid obtained from the tar of wood, and creosote oil is obtained from the tar of coal. I do not know, and I do not think, that inferior creosote oil gives off a vapour sooner than good creosote oil. I agree with Dr. Miller, president of the Chemical Society, that creosote is a colourless liquid of a high refractive power, that it does not take fire easily, and that, once lighted, it burns with a smoking flame. I mean cresote oil, not creosote. The temperature on a hot day would be greater outside than under the stage.

The SOLICITOR-GENERAL: According to what you say, then, it would be a a very dangerous thing to place a lamp in such a chamber, so close to creosoted timber?

Witness: Yes, certainly.

The SOLICITOR-GENERAL: It would set it on fire?

Witness: Yes, it would.

The SOLICITOR-GENERAL: The flame would play on the under surface of the deck, between the beams?

Witness: Yes, it would not take long in setting the timbers on fire.

The SOLICITOR-GENERAL: Supposing, at the time the man put his lamp on the keelson, there was an escape of gas coming from the bend towards the flame of the lamp, might it explode or ignite?

Witness: It might explode or ignite; but in that case the flame would follow back and burn at the bend. Such a flame might be easily put out.

The SOLICITOR-GENERAL: Might not the flame of creosote be easily extinguished, too?

Witness: Yes; but as the vapour was continually forming, as in my mind it appeared to be doing, as fast as the man wiped it out in one place it caught fire in another.

Re-examined by Mr. ASPINALL: Supposing there had been a leak in the bend going on for three days, it was utterly impossible that the gas should not have exploded immediately the lamp was placed in the chamber.

The witness *Ledson*, at the request of the Solicitor-General, was recalled, and in reply to a question said that when he came out of the man-hole, after the fire took place, he did not remember there was any strong smell of gas. He could not say that there was a draught when he put his lamp on the keelson; but there was nothing to disturb the flame of the lamp.

Mr. *Charles Heisch*, examined by Mr. RUSSELL.

Witness said he was lecturer on chemistry at the Middlesex Hospital and superintendent gas examiner in the City of London. He had heard the evidence given for the defendants, and also the evidence of Harris, and the other witnesses for the Dock Board, as to what they saw beneath the stage.

Mr. RUSSELL: In view of that evidence, is it in your judgment possible that this fire could have been caused by any considerable escape of gas?

The SOLICITOR-GENERAL: I object. That is not a question for the witness, but for the jury.

Mr. RUSSELL: My lord, I put the question. (To witness:) Having heard Harris's evidence, in your judgment is it possible that the fire could have been caused by the screw-plug being out of the end of the bend, or by any considerable escape of gas?

The SOLICITOR-GENERAL: That is not a scientific question; it is a question of observation.

His LORDSHIP: Do you think it worth while to object?

The SOLICITOR-GENERAL: Perhaps not; on reflection, I do not think it is.

The question was repeated.

Witness: I do not think the fire could have been caused in that way, because, supposing the screw-plug to have come out of the bend, the whole of the chamber must have been brilliantly illuminated by the flow of gas taking fire, and those men must have seen it.

Mr. RUSSELL: And must that illumination have extended a long way beyond where they were working?

Witness: Certainly.

Mr. RUSSELL: And must that illumination have been instantaneous upon ignition of the gas, and preceded any volume of smoke?

Witness: Certainly.

Mr. RUSSELL: And would such an escape of gas, after it had been set on fire, have returned to the bend and burnt there?

Witness: Certainly; just as from a blow-pipe.

Mr. RUSSELL: If an explosion of gas had taken place, what would have been its effect upon a man standing near?

Witness: It would have blown the whole mass of flame into his face, and scorched him fearfully.

Mr. RUSSELL: If there had been a less escape of gas, coming, for instance, from a quarter-inch pipe, what, in your judgment, would have been the result?

Witness: I think there must have been an explosion if there had been any considerable escape of gas.

In further examination, the witness said: Looking at the quantity of creosote oil in the wood, I believe that a lamp, placed in the position in which this was placed, added to the natural heat of the atmosphere in July, would cause the wood on each side and above it to give off inflammable vapours. The vapours given off would be partly naphthaline, and some other substances of uncertain composition which are more or less inflammable. The construction of the stage would favour the retention of these vapours. If from any cause the naphthaline was set on fire, the fire, no doubt, would seize upon the sweaty matter exuded from the wood. The fact that the flame, when seen by Ledson, ran along the surface of the lower deck, in an easterly direction, is quite inconsistent with the theory that the fire was caused by the gas. I did not know that wood saturated with creosote would give off an inflammable vapour until I considered this case, and I do not think it is a matter of common knowledge. I agree in the evidence of Mr. Keates, having assisted in the experiments made by him, and I believe that it was most consistent to suppose, in this case, that the heat of the weather and the heat of the lamp combined caused an ebullition of inflammable vapour from the wood immediately above the lamp, that the lamp then set fire to that vapour, and the flame was communicated with the other inflammable matters in the wood, and was then communicated to the wood.

Cross-examined by Mr POPE: I hardly think a gas-fitter could mistake the bluish flame from the vapour of creosoted wood for gas, unless the gas which caused the flame were mixed with a large quantity of air, so as to make it burn blue. He could not mistake it for a moment for a jet of gas coming from a plug-hole. If there had been an accumulation of gas in the chamber, I should expect an explosion when a light was brought to it. I did not try any experiment as to igniting wood (creosoted by Bethel's patent) over a lamp, because, until I and Mr. Keates came down here last Tuesday, we had not heard of the lamp. I have not ascertained by experiment whether creosoted wood would ignite at certain distances from a lamp, nor have I experimented as to whether any mixture of creosote and air will explode. In my opinion, Ledson's lamp set the stage on fire.

Re-examined by Mr. RUSSELL: A small escape of gas igniting by the flame of the lamp would have produced no serious consequences, and could have been put out without difficulty.

By the JURY: If there was a light from a jet of gas from the bend alongside the beam, I think it must have been observable by anybody down the avenue, unless it was very small.

Dr. *A. Dupre*, examined by Mr. WILLIAMS.

Witness said he was lecturer on chemistry to the Westminster Hospital, chemical referee to the medical department of the Local Government Board and to the Home Office, and also a fellow of the Royal Society. He had heard all the evidence given up to the present point, especially the testimony of Harris and the men working with him.

His LORDSHIP expressed an opinion that it would be sufficient to ask whether Dr. Dupre agreed with the other scientific witnesses.

Mr. ASPINALL said he had carefully considered the matter, and, as the present witness had made experiments independent of the others, he was anxious that it should be laid before the jury.

Examination continued: Witness said if the plug had come out of the bend, and the gas was ignited, the result would have been a flame, which would have lighted up the space and been seen by the men. He was of opinion that the circumstances connected with the fire were inconsistent with an explosion of gas, for the conflagration originated in the ignition of the vapour from the creosoted wood.

This closed the case for the defendants.

The SOLICITOR-GENERAL then asked leave to amend the declaration. He said it would have been seen, from the whole course of the case, that the information the plaintiffs had was derived from the statements made by the gasmen, or those alleged to have been made by them; and he asked to be allowed to slightly amend the declaration by alleging the negligence to consist, not only in allowing the gas to escape, but in placing a naked light under the timbers of the stage. In the declaration it was stated, "Yet the defendants did not use due care and diligence in fixing and laying down the said gas-pipes under and round about the said stages, but, on the contrary, negligently allowed gas to escape from the gas-pipes, and to take fire, and to burn for a long time, and to come in contact with the said landing-stages." He wanted to insert there the words, "and negligently placed a naked light under and near to the timbers of the said stages, and thereby ignited the same." The case set up by the defendants came upon the plaintiffs entirely by surprise, and they desired to have their pleadings so framed as to meet it.

Mr. ASPINALL said he should object to the application on the ground that the declaration so amended would, in fact, enable the plaintiffs to set up a new case—a case for which the defendants were absolutely unprepared, and which took them by surprise in the strongest possible manner. The learned counsel on the other side knew—at all events from the moment they called Mr. Martin Murphy—the facts which were about to be proved, and must have been aware of them from the beginning of the case, and yet they had held their hands, thereby preventing the defendants absolutely from going into the question. They had not gone into that question—they had not been prepared to do so; and he ventured to submit that an application made at this stage of the case, after hearing all their scientific evidence, and for an amendment upon a question which eminently depended upon scientific evidence, which it would be impossible for them to go into without calling scientific evidence of quite another class, did not come within the class of amendments which the Legislature contemplated should be made.

The point having been argued at some length, the learned JUDGE stated that though he had an opinion of his own on the matter, he should like to consult with Mr. Justice Archibald, who was presiding in the other court. He accordingly retired for the purpose, and on his return, said: When first the application was made by the Solicitor-General I entertained a strong opinion, but I am bound to say that opinion was very much shaken when I heard the arguments of Mr. Aspinall and Mr. Russell. My brother Archibald and myself have considered the matter carefully. There is no doubt that I have the power to make this amendment, if I choose to exercise it—that is to say, I can clearly make the amendment required by the Solicitor-General, which is, in fact, to add to the declaration something which is in the shape of another count alleging the negligence to be by the contact of the wood with the candle instead of the neg-

ligence being by the contact of the wood with the gas. That is, in substance, the alteration which it is desired should be made. I must, of course, before I venture to make an alteration of that description, in a case of such very great importance as this, and involving such a very large sum of money, be very careful that while on the one hand the real merits of the case are decided, on the other hand I must see that neither party is placed at a disadvantage. Those are the objects I have to deal with and carefully to consider. I ask myself this question—what was it that the defendants came here to meet? It is obvious that they came here to meet the question of an explosion by gas, and that they were confined to that by the order before the prothonotary, and by what Mr. Russell says is my own order, although I do not recollect the arguments used before me. It did occur to me that the defendants ought, as their case was that the conflagration arose from the lamp coming in contact with what they describe as vapour and the oil attached to that vapour, to have been prepared for every contingency. The argument of the Solicitor-General brought that to my mind, and the evidence was directed to it all throughout. When I come to consider what their witnesses were asked, the real question put to them was in substance this—"Did you know of any such state of things with reference to creosote as would render the proximity of a candle dangerous, from the fact that creosote was in the habit of evolving vapour?" And certainly it is remarkable that each of the scientific witnesses (whom I wish to treat with the greatest respect) said they had not thought of directing their attention to the question of combustion from the contact of the vapour over the flame. If I was to make this amendment as it stands at present, I should be placing the defendants at a disadvantage. Mr. Aspinall has said that the mere question of cost is insignificant in comparison with the sum claimed, and it occurred to me that this might be done; if I should say I do not think that the ends of justice require that the amendment should be made, the difficulty would be in discharging the jury. If the jury were discharged I could make an order for the amendment to be made, on the condition that the case shall stand over to the next assizes. Or I would make this order for the amendment, and instead of discharging the jury, adjourn the case till next assizes, or till some other period when the defendants might be ready with further evidence. It seems to me the more convenient course would be that the jury should be discharged, and that this amendment should be made—that is to say, if the Solicitor-General chooses to accept the amendment. I do not think I should ask him to decide what he should do now, unless he likes. Of course, Mr. Aspinall, I should require your consent before discharging the jury.

The SOLICITOR-GENERAL: May I ask, supposing the jury is discharged, and Mr. Aspinall consents to it, what effect that would have upon the costs?

His LORDSHIP: If I make this amendment, it seems only reasonable that you should pay the costs.

The SOLICITOR-GENERAL: We might, of course, elect to be nonsuited. I do not know that there would be any difficulty then. I tell you candidly, as the evidence stands, I should be very reluctant to proceed with a cause of this magnitude and deprive myself of one main argument. Supposing the jury were to come to the conclusion that the particular specific negligence mentioned in the declaration was not proved, I am not prepared to say whether the plaintiffs could bring any further action or not. If they did bring a further action, it would have to be confined to the particular negligence.

His LORDSHIP: It is that difficulty which is in my mind.

The SOLICITOR-GENERAL: I should have thought the reasonable course would be to let the matter be adjourned until the next assizes, and allow the costs to abide the event.

Mr. RUSSELL: Those are not the ordinary terms.

The SOLICITOR-GENERAL: This is not an ordinary case.

His LORDSHIP: At first I considered that the defendants ought to have been prepared to consider all the circumstances connected with the position of the lamp; but afterwards when I came to dwell on the matter I did not think that position was quite sound, from the fact that none of their scientific witnesses had their attention called to the theory of the timber itself catching fire from the lamp.

The SOLICITOR-GENERAL: All their witnesses said that if that timber had not been creosoted it would not have caught fire.

His LORDSHIP: I am thinking of the difficulties they might be placed in.

The SOLICITOR-GENERAL: The negligence I would allege is the placing of the lamp underneath the creosoted timber. Perhaps your lordship would allow me until to-morrow morning to consider the matter?

His LORDSHIP: Certainly.

TUESDAY, AUG. 24.

At the sitting of the court this morning, the SOLICITOR-GENERAL said that having considered the question which was left to him on the previous evening, he had come to the conclusion, on behalf of the plaintiffs, to go on with the case, and he desired to call a man named Gilbert, for the purpose of showing that when he saw Ledson getting out of the man-hole there was a strong smell of gas. The plaintiffs did not know, until the defendants called their witnesses, what their contention would be. They did not know also of the evidence of the man Gilbert, nor that it would be alleged on the part of the defendants that the statements made by Ledson when he came out of the man-hole were untrue, and that the place was not set on fire by the gas. He could detect nothing from the cross-examination of the plaintiffs witnesses, except a theory on the part of the defendants that the stage might have been full of vapour from the creosoted timber.

His LORDSHIP said the rule was very precise upon the matter that the plaintiffs should confine their case to the evidence given by their own witness in support of the opening statement. The point now was whether there were any exceptions to this rule.

The SOLICITOR-GENERAL submitted that, if the defendants set up a totally different case, it was quite open to him to rebut it.

Mr. ASPINALL said at the outset the case was that the defendants negligently allowed gas to escape and take fire, and burn for a long time. Now the plaintiffs proposed to call a witness to say that he perceived a smell of gas. This was evidence they should have called in the first instance.

The question having been further argued,

His LORDSHIP said he would again consult Mr. Justice Archibald; and, having done so, he said he was happy to state that his learned brother agreed entirely with him that the evidence could not now be called. He had also consulted his learned brother on the question whether it could be left to the jury, on the first part of the declaration, to say whether the fire occurred through the gas being negligently allowed to escape, or whether it arose from negligence of some other description. If there had not been the words "but on the contrary," he should certainly have left both questions to the jury; but, looking at the declaration as it stood, he did not think he could do so. Of course, it would be open to the Solicitor-General to object to his direction in any way he thought fit. The point to be left to the jury would be, was the burning of the stage a consequence of the negligence as described in the declaration, confining it, of course, to the escape of gas; and, in leaving that question to the jury, he should have to ask them to go into the whole question as to whether it arose from gas or not, and whether the suggestion of the defendants that the accident arose from the lighting of the vapour had been satisfactorily proved.

Mr. ASPINALL then proceeded to address the jury. The question, he said, which they had to decide was the most important one, in many senses, that had ever been tried in England, and certainly in Liverpool. In saying that, he did not rely upon the enormous pecuniary considerations involved, nor upon the number of people who would be affected by the judgment. But there was another matter which he hoped the jury would keep in their minds, and that was the effect which the decision they might think it their duty to come to would have upon the character and position of the two young men Ledson and Pennington. He appealed to the jury to consider their respectable appearance, their demeanour, the way in which they had behaved in the witness box, the manner in which Ledson conducted himself at the time of the accident, and he also requested them to consider that they could not find a verdict for the plaintiffs without affixing upon these young men, not merely the stigma of having been the cause of the greatest calamity of the kind which had ever happened in this or any other country, but the crime of having, for the purpose of escaping from the fault which would be imputed to them if they had negligently set fire to the landing-stage, committed wilful and corrupt perjury. What the jury had to decide was whether the defendants, by their servants, had been guilty of negligence; that was to say, whether one of their servants caused the fire by his negligent act, by his doing something which no reasonable man ought to have done under the circumstances, or by his omitting to do something which any reasonable man ought to have done.

His LORDSHIP said the definition which he should give of negligence was this: Negligence is the omission to do something which a reasonable man, guided by those considerations which originally regulate the conduct of human affairs, would do; or the doing something which a prudent and reasonable man would not do.

Mr. ASPINALL said the jury must not direct their attention to the question of whether the fire was caused by the flame of the lamp coming into contact with the wood, without the intervention of gas, even though they should like to find the defendants liable on that ground. The only point for their consideration was as to the liability or not of the gas company for negligently allowing the gas to escape. With reference to the attempt made to introduce, at the last moment, a witness to speak to a strong smell of gas on the stage, it was a curious fact that neither Mr. Lyster nor any of the great body of witnesses called, had smelled an escape of gas. Coming to the admissions of the gas-fitter, he said there was no doubt that the expressions which he used on coming up the man-hole were honest, and that they described his belief at the time when he was in a state of surpassing excitement, and when he could not account for the fire in any other way. The idea passed like lightning through his mind: "I know I did not do it, but I must have done it. I do not remember it. I know that the plug had not been screwed out. But I see the vapour there and a fire, and as I cannot account for that light in any other way, it must be gas." A man in this condition of mind, and in ignorance of the naphthaline in the creosoted timber, would give all sorts of different explanations, just as Ledson did; but if it was afterwards conclusively proved that the fire was not caused by an escape of gas, but by the ignition of the vapour of the creosote, surely the jury ought not to discredit the statement of Ledson made under such extraordinary and unprecedented circumstances. In the present case the burden of proof was on the plaintiffs—that it was for them to show that the servants of the gas company did something negligent; and if he could only show that the facts of the case were consistent with there being no negligence, he had done all he was bound to do. He was not bound to prove how the fire did originate; he was only bound to show that there were causes from which it might have originated other than the one alleged by the plaintiffs—namely, the negligently allowing gas to escape and become ignited; and this, he contended, the evidence had fully shown.

The SOLICITOR-GENERAL replied upon the whole case. He said the question with which the jury had to deal was simply whether this fire was occasioned by the escape of gas either in large quantities or in small quantities; and if it was occasioned by the escape of gas either in large or small quantities, were the defendants servants guilty of any negligence with respect to that matter? He quite admitted the accuracy of his learned friend's definition of negligence—that it meant the doing of something which a prudent man would not do, or omitting to do something which a prudent man would do. Now, if the fire did happen through the escape of gas, it happened because the gas was not turned off, and everybody who had come into the court and given testimony had agreed that if Pennington and Ledson were working under the stage at the work at which they were engaged at the time, at all events they ought not to have proceeded without the gas being turned off. The question remained for the jury whether the gas was turned off or on; but if they were of opinion that it was not turned off, why then there was negligence on the part of those men. Of course, his learned friend relied on the evidence of Ledson and Pennington, and asked the jury to believe in it most implicitly. The jury, however, would have to form their own conclusions about the evidence of those men, and in doing so they would bring to bear their own common sense; and at the very outset he asked them to remember that, if any persons were to blame for this enormous destruction of property, Ledson and Pennington were the men; and, therefore, he submitted that their evidence ought to be looked upon with something like suspicion at all events, and sifted with the greatest possible care and scrupulosity. Did their actions previous to the fire show that they were gas-fitters of the greatest possible skill, care, and prudence, and entirely to be relied upon, or did they show that they were about as reckless and careless as they could possibly be? What took place on the morning of the fire, before breakfast? Ledson went down under the stage with a light—the gas, which had been on all night, not having been turned off—and, without the least assistance, commenced an operation which was one of the most dangerous operations it was possible to conceive. Knowing, as he said, that the gas was on, he began unscrewing the temporary connexion which had been made between the main and the gas-lamp, when the slightest slip—the slip of a plug, the slip of a hand, the slip of a finger—the slightest error or the slightest mischance, might have resulted in the whole of the place being instantly set on fire, as it was later in the day. Was that the conduct of a prudent man? Did they think that any gas-fitter who was to be put before them, as a man upon whom they could most thoroughly and implicitly rely, would have conducted himself in that way? Referring to the declarations made by the gas-fitter Ledson, when he came on deck through the man-hole after the fire broke out, his learned friend said they were made in the excitement of the moment. Well, a man might be excited and might be confused; but why he should make statements which he must have known to be incorrect—if they were so—he (the Solicitor-General) was at a loss to conceive. He might have said, "For God's sake get a bucket, the stage is on fire;" but why should he say, "I was taking off a joint; it's me, it's me"? Chaffers asked him if the gas was turned off, and he said, "No;" and then Chaffers said to him, "Go and turn it off as soon as you can." Again, when he came up to Mr. Lyster, he said, "Oh, my God, the stage is on fire. I did it. I am a ruined man." Why was he a ruined man? He was not to blame. He had not done anything, according to the defendants, which the most prudent man in the world might not have done. Why should the man, because he was excited, attribute to himself blame which did not rest upon him? When Furness asked him what he had been doing, he said the plug had slipped out, and the stage was on fire. If that were not true, why should he volunteer a statement like that? It was not a mere exclamation of alarm or terror, but a specific circumstantial account of how the thing happened; and the reasonable inference to be drawn was, that what Ledson said was the real truth of the matter. These statements were made before he had seen Mr. King, and before the creosote theory had crossed his brain, and was it not more likely that what he said at the time of the fire was the truth, than a story he now told after 12 months reflection? He asked the jury not altogether to trust the evidence of Ledson and Pennington, but to consider the position in which they were placed. He asked them to bear in mind the testimony of Harris and the other witnesses for the plaintiffs, and especially

to have regard to the declarations of Ledson, made on the instant, about matters which, according to all testimony, he must have been perfectly sure. He asked them to come to their own conclusion in the case, and not to be terrified by his learned friend telling them that this was an enormous calamity, that there was a vast amount at stake, and that the poor shareholders or the gas consumers would have to bear the loss. They had nothing to do with that. He did not know that it was such a terrible calamity. He could imagine many more terrible. The first stage had been burned, and a good job it had been for the many workmen employed to reconstruct it, whilst nobody had been killed or drowned. No doubt there was a large sum at stake, and, if they liked, they might think it was rather hard upon masters to be made responsible for the acts of their servants. But they had to deal with the law as it was. Mr. Bumble said the law was "a hass," but counsel did not always think so. The law said that the master was responsible for the negligent acts of his servants done in the ordinary course of his employment, and that being so it was the duty of the jury to say whether there had been negligence in this case. There had been no negligence on the part of the plaintiffs, and, if the jury found that there was negligence on the part of the servants of the defendants, it would be their bounden duty to find a verdict for the plaintiffs.

His LORDSHIP summed up the case to the jury. He commenced by remarking that he supposed they would not be troubled with the question of damages, for it had been agreed by the learned counsel on both sides that if the verdict should be for the plaintiffs the amount of compensation should be referred to some competent person. But the case was important because the amount on the result would be probably greater than any verdict that had ever yet been delivered in a common law court. However that might render it necessary that they should pay more attention, or at least give their best attention to the subject, they were not to be terrified. Happily, in this case, the loss must fall upon one of two public bodies, and ultimately be divided, in very minute proportions, amongst those who contributed to the maintenance of those bodies; and therefore it was not a question of ruin on one side or of disaster on the other. A large structure had been burnt down, and the question was, had the plaintiffs proved to the satisfaction of the jury that it arose through the negligence of the defendants? Undoubtedly what the Solicitor-General told them was perfectly true. Whatever might be their views upon the subject, the law was clear that the master was answerable for the negligent acts of his servants, and in this case, if the evidence satisfied them that there had been negligence on the part of the servants of the gas company, their verdict would be for the plaintiffs. If there had been negligence by the servants of the defendants, as a matter of law the gas company were answerable. Now, what was negligence? Having given the legal definition of negligence, similar to that already stated, his lordship proceeded to say that the learned counsel for the defendants was quite right in saying that the onus of proof was upon the plaintiffs. The Dock Board had to make out to their satisfaction that the defendants had been guilty of negligence. If they failed to do that they failed to make out their case, and in that event the verdict would be for the defendants. The plaintiffs had imputed negligence to the defendants, but they must define it, or rather they had chosen to define it. If the Dock Board had put vaguely in the declaration that the gas company were guilty of negligence, it might be a question whether such a declaration was good; but instead of that they had put on their declaration the precise negligence which they charged against the defendants, and said that the company did not use due care and diligence in fixing and laying down the gas-pipes under and round about the stage. If they had left it in that way it might be contended that the other cause of negligence could be introduced; but they limited that general statement by another statement which followed. They said: "But on the contrary they negligently allowed the gas to escape from the pipes and to take fire and to burn for a long time, and to come into contact with the stages, whereby the said stages were burnt." And when an application was made by the Solicitor-General to amend his declaration by putting the ground of negligence in the larger form, it was resisted by counsel for the defendants in very forcible arguments. He took time to consider the matter, and consulted with his brother Archibald, and they came to the conclusion that, as certain steps had been taken by which the defendants sought to obtain from the plaintiffs the exact ground of their negligence, and had been dismissed because the ground of the negligence was stated in the declaration, they ought to confine the Solicitor-General to the negligence first set out in the particulars. He would now tell them what his direction would be in point of law. They must take it from him that day, but if he was wrong he would put it in such a manner that either side might have the benefit of the consideration of the superior court if necessary. What they had to consider was this—whether the plaintiffs had satisfied them that the defendants did not use due care and diligence in fixing and laying down the gas-pipes under and round about the stage; they had to satisfy them that the defendants negligently allowed the gas to escape from the pipes "and to take fire, and to burn for a long time, and to come in contact with the stages." In substance the question was—Aye or no, had the plaintiffs proved that the burning of the stages arose from the negligence of the defendants in allowing the gas to escape? They must not go into other matters, but keep their minds firmly to that narrow issue, and apply the evidence as they went through to it. He was bound to say that he never recollected seeing a body of men (and he referred both to the witnesses for the plaintiffs and those for the defendants) whose manner and whose demeanour were more creditable than the working men who had been called. They were about as fair specimens of well-thinking, intelligent men as ever he had seen; and he must say that the demeanour of Ledson and Pennington was very much calculated to make a most favourable impression. But, on the other hand, the Solicitor-General said they must weigh the evidence of these men carefully, because they had a very enormous interest in this matter. Here was an immense loss of property attributed to them. It was alleged that the landing-stages were destroyed through their negligence—which was one of the most serious imputations that could fall upon a working man who was entrusted with important employment. And, therefore, said the Solicitor-General, they had every interest to excuse themselves. And then, he added, there were two or three occasions upon which Ledson's conduct was open to question. No doubt, if the jury could place implicit reliance in Ledson and in Pennington, there was the strongest negative evidence of negligence—the strongest possible testimony of an absence of negligence, inasmuch as according to them there was not the slightest escape of gas or anything of the kind. But then the jury must, after making every allowance for the admission which Ledson made because of his excitement, ask themselves, did they believe that he would have said, "Oh, my God, the stage is on fire; I did it: I am a ruined man," if he knew that no gas was escaping? He said to Sharpe, "I was doing a joint, and the main has taken fire." There he was more precise; and again he was particular when he exclaimed that a plug had come out of the main and his candle had set it on fire. His lordship having reviewed the whole of the evidence in a most exhaustive manner, concluded by advising the jury to come to a decision firmly on the evidence, without regard to what the consequences might be one way or the other.

The jury retired at about half-past six to consider their verdict, and at seven o'clock it was intimated to the learned judge that they were not likely to agree.

His LORDSHIP sent for the jury, and on their appearing in court said: I have sent for you not for the purpose of interrupting your deliberations at all, but I wanted to mention this. Of course, if your verdict is for the defendants, there is an end of it; if your verdict is for the plaintiffs, the parties have agreed that the amount of damages shall be ascertained by an arbitrator, who shall go into the whole of the expense. What would naturally arise, the questions of law that might occur, would be referred to the court, so that you will be only asked for your verdict either for the plaintiffs or for the defendants. And if there is any part of the evidence you wish to be read over, I should be very happy to do it. If not, I should remit you to the consideration of your verdict.

The FOREMAN: I think I may say to your lordship we are unanimous except two gentlemen.

After some conversation, his LORDSHIP directed the jury again to retire.

Shortly before ten o'clock they returned into court, and gave a verdict for the plaintiffs.

WEDNESDAY, AUG. 25.

At the opening of the court, Mr. POPE applied to the learned judge to certify for a special jury in this case.

His LORDSHIP said he should certainly do so, but the question in his mind was as to how the verdict should be entered as to the amount.

Mr. ASPINALL said the usual course was not to enter it for any amount.

His LORDSHIP said he believed the usual course was to enter the verdict for the damages in the declaration, subject to a reference.

Mr. POPE: That is the usual course. It is merely a formal verdict, of course.

His LORDSHIP said the note he made on the previous day respecting the arrangement as to damages was, "It was arranged that the damages were to be referred to some one to be named by the Solicitor-General and Mr. Aspinall if the plaintiff gets a verdict; the arbitrator to state a case, if he should think fit, as to the principle on which damages are to be assessed." Mr. Russell had asked him to strike out the words "if he should think fit," but it occurred to him that if he did, it would make it imperative on the arbitrator to state a case. He thought they had better leave the words in, leaving it to the arbitrator to state a case if he thought necessary; or they could insert the words "if required."

Mr. POPE: I think my friend should have every opportunity of having any point of law raised.

Mr. ASPINALL: It is understood that in consenting to this we do not waive our right to move in any way.

His LORDSHIP: Certainly not. You have a most important point, especially in reference to the admissibility of evidence.

Mr. ASPINALL: Your lordship having said that, will stay execution.

Mr. POPE: There can be none until the verdict is properly entered up.

His LORDSHIP: Of course; there is no doubt about it.

Mr. POPE: Your lordship will certify for the jury, of course?

His LORDSHIP Certainly.

WESTMINSTER POLICE COURT.—FRIDAY, AUG. 27.

(Before Mr. ARNOLD.)

CHARGE OF STEALING GAS.

Mr. *George Sanderson*, free vintner and proprietor of the Cadogan Hotel, Sloane Street, Chelsea, appeared in discharge of his recognizances for final examination, charged with stealing 600,000 cubic feet of gas, the goods of the London Gaslight Company.

Mr. BESLEY, instructed by Mr. H. E. Browne, solicitor to the company, prosecuted; and Mr. MONTAGU WILLIAMS, instructed by Mr. Child, defended.

The evidence, which is of very great length, has been detailed on the several examinations in our columns; and it will be remembered that on the last occasion the *res gestæ* of the matter were, as deposed to, of a very singular character, showing that in November, or thereabouts, of 1871, there was no gas in the wine storeage cellar of the defendant at the rear of his premises, in the Pavilion (formerly the New) Road; but that, about that time, a cellarman of the defendant came into the parlour of the house, 131, Pavilion Road (the defendant being the landlord, but dividing the cellar for his own use from the rest of the house), and removed a gas-pipe from the floor, and after that gas was burned in the cellar in a sort of stove, for the purpose of warming it, the gas not passing through a meter, but being supplied direct from the main by means of the removal of the company's cap, or stop-pipe, the addition of a ¾-inch cock and reducing socket, the gas passing through an india-rubber tube 17 feet long, and supplying four fishtail burners to the stove.

Mr. ARNOLD asked if there were any further evidence.

Mr. BESLEY said no doubt the magistrate recollected that, on the last occasion, he mentioned the name of a man named Frost, who was the cellarman of the defendant at the time the gas was first burned in the cellar. That man necessarily was a most important witness, and as they had been able to find him, he (Mr. Besley) considered it his duty to put him in the box, and hear what he had to say on the matter.

Mr. *Robert Frost*, examined by Mr. BESLEY, said he was at present the landlord of the Crown public-house, Soho. He was formerly employed by the defendant as cellarman for about 2½ years from March, 1871. The cellar of the house, No. 131, Pavilion Road, in the rear of the hotel, belonged to Mr. Sanderson, as did the whole of the rest of the block of houses. In that cellar wines were kept, and it was used for racking off and bottling wines, and as a stock or storing cellar. When he first went there, the only artificial light in the cellar was produced by candles. He could not tell to a month any way, but in the autumn, or at the close of the autumn, the gas was put on in the cellar. He did not know where it came from, and the defendant did not tell him. The defendant gave him orders to go to a Mr. Attridge, who lived in the Pavilion Road, and did odd jobs at blacksmith's work, &c., and employ him to put the gas on in the cellar. The machine produced was used, but he could not recollect whether the defendant was present in the cellar when the gas was being put on, or whether he was there himself. He might have been there, but would not pledge himself to anything certain. He believed the defendant or one of the porters brought the apparatus into the cellar from the hotel, where it had been some time. He did not know, of his own knowledge, how the gas tubing came into the cellar. The defendant brought it to the hotel either in a cart or his phaeton, and it was fixed to a pipe that protruded from the wall at one end of the cellar. The apparatus was moveable, and could be placed at any part of the cellar by reason of the length of the tubing. Water was used in an iron pan below the gas for the purpose of heating the cellar, and he had instructions to keep the vessel full as the water evaporated. Sometimes the gas was burning all night in the extremely cold weather, and there was a thermometer by which witness could regulate the heat by turning up or down the gas. The thumb-tap, close to the burners, was the tap that was used, and not the one at the cock. The apparatus had an earthenware top to it, in the shape of a beehive. The gas was not used for the purposes of lighting—only warming the cellar, as, even when it was in operation, candles were burned to do the other work. Mr. Sanderson superintended the business of the cellar, but the temperature was left to witness.

By Mr. ARNOLD: The apparatus was right opposite the cellar-flap

By Mr. BESLEY: He left the service of the defendant in September, 1873, and the gas was then being used as heretofore.

Cross-examined by Mr. WILLIAMS. He was not present on the 19th of July when the servants of the gas company went and inspected the cellar and removed the fittings. When he went to the gas-fitter he had not the slightest notion the gas was going to be used improperly. The gas was burned continually for about four of the coldest months. There was no other means of access to the cellar other than by the street flap.

By Mr. BESLEY: There was a door that led to the staircase of the house, but that was blockaded with casks, and cut off the communication, so that it could not be opened.

By Mr. ARNOLD: The flap was sometimes left open while the gas was burning, and witness sometimes left and went to the hotel, leaving no one in the cellar. There was no chance of anybody stealing the wine while it was so left, without they had taken down something to hold it, as it was all in cask.

Any one who was passing would not probably see that there was gas, as there was only a glimmer, or a shade on the floor.

Mr. *Richard Pearce*, one of the inspectors of the company, was recalled, and in answer to Mr. BESLEY, said he had ascertained that gas was formerly supplied by the company to Edward Clements, the tenant of 131, Pavilion Road, but it was cut off in 1865.

By Mr. WILLIAMS: The gas was supplied by meter, not by contract.

By Mr. ARNOLD: When Clements's gas was cut off, the meter was taken into the company's stores.

Mr. *Tully*, recalled by Mr. BESLEY, said that since the last adjournment he had caused the ground between the hotel and the house, No. 131, Pavilion Road, to be surveyed, and the gas did not go beyond the boundaries of the hotel.

By Mr. WILLIAMS: The survey lasted an hour, and three or four men were employed.

Mr. BESLEY said that was the case for the company, and if he intended to call any further evidence on the trial, for he presumed he had made out a strong *primâ facie* case, he would give the defendant due notice of the evidence of such witnesses. He would, therefore, now ask that the defendant be committed to take his trial at the Central Criminal Court, and in that course Mr. Williams assented.

Mr. ARNOLD hoped that if the judge who tried the case should ask the reason why (it is the rule that some special cause shall be assigned for sending ordinary matters to the Old Bailey, on account of the great expense incurred in the trial of prisoners there), he hoped the learned counsel would inform him that it was at the request of both counsel engaged.

Mr. WILLIAMS said that should be done; but he apprehended that no such question would be asked, especially by the City judges. His client had been very anxious that he should have addressed the court on the merits of the case, and called witnesses; but he had very properly placed himself in his (Mr. Williams's) hands, and he felt it his duty not to adopt that course, as the matter must go before another tribunal, and it would only be a waste of time to call witnesses before the magistrate. He trusted that the public would suspend their judgment in this matter, for the defendant, he was instructed, had a complete answer, and would vindicate his character beyond shade of suspicion; he was a man of high position. He presumed the same bail would be taken.

Mr. BESLEY said he must object, as it was a very serious charge, and, he ventured to submit, one that was fully made out against the defendant. Undoubtedly, he was a man of high position and fortune, but every one knew that, in his case, conviction brought with it the inevitable forfeiture for ever of his licence. Besides, it was a common thing now for persons charged with offences to leave the country between the time of committal and trial; and, although he (Mr. Besley) had no such thought in his mind as suggesting that the defendant should be incarcerated pending the Old Bailey Sessions, still, at the same time, it would be no hardship to ask him to find heavier bail; he did not mean crushing bail that a man could not find, but some more substantial security than he had as yet found.

Mr. WILLIAMS thought the fact of his position and property would have been the very thing that would keep him in the country.

Mr. ARNOLD said that, looking at the position of the prisoner, and the serious nature of the charge, he should require him to enter into his own recognizances in £500, and find two sureties in £250 each, or one in £500, to take his trial at the Old Bailey in September.

The required bail was immediately put in, and the proceedings, so far, terminated.

Miscellaneous News.

THE BRIGHTON GASLIGHT AND COKE COMPANY.

The Half-Yearly Ordinary Meeting of this Company was held on Thursday, the 26th inst., when the following report and statements of account were submitted and adopted:—

Throughout the last six months there has been a considerably increased demand for gas; but the directors regret to have to report that notwithstanding the long continuance of cold, the company has experienced great difficulty in disposing of its coke; and that the prices realized have been altogether disappointing and unsatisfactory. It does seem extraordinary that the public should so little appreciate the economical value of coke as a fuel.

Though the progress of the several works of renewal, alteration, and enlargement has been frequently interfered with and delayed by bad weather, it is expected that all, or at least those most essential, will be completed in good time for the forthcoming season.

The great falling off in the receipts for coke, the reduction of 6d. per 1000 feet, equalling 12½ per cent. in the price of gas, as compared with the corresponding period last year; the large increase in wages and other manufacturing expenses, an unusually heavy cost of wear and tear, and a larger amount of capital entitled to dividend, oblige the directors to recommend a slightly diminished dividend of 4½ per cent. for the half year ending the 24th of June last; the same to be payable, less income-tax, on and after the 6th of September next.

Several holders of new shares having expressed a wish to be allowed to pay up their shares in full, the directors take this opportunity to inform proprietors of new shares generally that no such payments in anticipation of calls can be accepted.

Dr. *Profit and Loss Account, for the Half Year ending June 24, 1875.* *Cr.*

Coals	£10,671	10	11	Gas and meter rental	£16,677	10	0
Materials for purification	397	12	0	Coke, &c.	4,422	2	11
Wages	1,985	5	1	Old stores, &c.	246	15	6
Rent, rates, and taxes	244	19	0				
Salaries, collectors commission, directors, and auditors	1,498	12	2				
General charges	173	9	9				
Wear and tear	2,126	3	6				
Bad and doubtful debts and allowances	186	18	3				
Balance	4,061	17	9				
	£21,346	8	5		£21,346	8	5

Dr. *Balance Sheet, June 24, 1875.* *Cr.*

Capital	£94,300	0	0	Expended on works	£85,667	2	2
Contingency-fund	5,775	12	6	Works in progress	2,764	14	0
Coal insurance account	1,762	7	7	Meters	2,057	2	1
Dividends unpaid	1,527	19	11	Coal, coke, &c., in stock	7,008	3	9
Depreciation account	1,977	3	11	Mains, service-pipes, and general stores in stock	1,262	10	3
Tradesmen's accounts, &c., owing	2,789	14	0	Sundry debtors for gas	6,056	12	1
Balance brought from last half year	428	18	11	Sundry debtors for coke, &c.	1,695	1	5
This half year, as above	4,061	17	9	Cash at bankers and in hand	6,112	8	10
	£112,623	14	7		£112,623	14	7

EXPLOSION OF GAS ON SHIPBOARD.—The screw steamer *Miranda*, of Hull, having on board a cargo of about 2000 tons of gas coal, arrived in the Cardiff Roads last Thursday, having been compelled to put back in consequence of a gas explosion which occurred the day before, while she was a few miles off St. Ives Head. Shortly after mid-day, it seems that the carpenter opened the small hatch of the forepeak in the floor of the forecastle for some purpose. He was about to descend with a lighted candle, when a fearful explosion of gas took place. The flames reached the maintopsail yard, and the forecastle was greatly damaged. A man named Benjamin Davies, of Newport, (Mon.), was blown into the air, and was not seen again. A part of his clothing, however, was picked up at a distance of 200 yards from the vessel. Five other men were injured, more or less.

BARNET DISTRICT GAS AND WATER COMPANY.

The Half-Yearly General Meeting was held at the London Tavern on Tuesday, Aug. 24—J. F. BONTEMS, Esq., in the chair.

The SECRETARY (Mr. A. Lass) read the advertisement convening the meeting and the minutes of the last meeting. The register of shareholders was sealed, and the following report presented and taken as read:—

The directors beg to submit to the proprietors the accounts of the company for the half year ending the 30th of June last.

The profit for the half year on the gas manufacture has amounted to £1419 18s. 3d., and on the water supply to £446 3s. 7d., and, after paying the dividend for the half year ending Dec. 31, 1874, and the interest on the loans to the 30th of June last, there remains a divisible balance of £1328 4s. 1d., out of which the directors recommend the declaration of a dividend, for the half year ending the 30th of June last, at the rate of £3 per cent. per annum on the A stock and shares, and £2 per cent. per annum on the B stock, leaving a balance of about £150 to be carried forward to the next account.

There is an abundant supply of water, and the quality thereof is exceedingly good, as will be seen from the following analysis by Dr. Tidy:—

Report on Two Samples of Water taken by my Assistant on July 13, 1875, in Winchester Quart Glass Bottles.

A. Sample of water taken from the cistern outside the Barnet Water-Works.

B. Sample of water taken from Lyons Down cricket field. Before being collected the water was allowed to run freely for half an hour.

Both samples were colourless when viewed in bulk through a two feet tube. They had no odour, cold or hot. They were perfectly clear and bright.

	Grains per Gallon. A.		B.
Actual and saline ammonia	0·02	..	0·001
Organic ammonia	0·008	..	0·002
Carbonates of lime and magnesia	10·15	..	9·90
Sulphate of lime	5·95	..	5·86
Chloride of sodium	3·42	..	3·42
Silica	1·10	..	1·00
Organic matter	0·03	..	0·05
Earthy nitrates	Mere trace.	..	Mere trace.
Total solid matter in grains	20·65	..	20·23
Hardness before boiling . . . . Degrees	18·8	..	18·8
Hardness after boiling for 15 minutes . . ,,	5·5	..	5·5

There is in sample A a slight excess of actual or saline ammonia. I consider this, however, perfectly accidental.

The analyses are in every way satisfactory, the water being one of exceedingly good quality.

(Signed) C. MEYMOTT TIDY, M.A., M.B., &c., &c.

The Laboratory, London Hospital Medicine College, July 22, 1875.

The gas-rental during the past half year has amounted to £3268 19s. 1d., which shows an increase on the corresponding period of last year of £440 1s. 9d., or equal to 13·46 per cent. and the water-rental has amounted to £1498 11s. 1d., which shows an increase on the same period of £226 8s. 8d., or 15·09 per cent.

During the past half year a new 10-inch rising main has been erected in the well in the place of the old 6-inch main.

The various extensions and enlargements of the works and mains which were contemplated are now being carried out, and there is every reason to believe that when completed the result will justify the expenditure.

The dividend, if sanctioned, will be payable on the 13th of September next.

Dr. *Gas—Revenue Account for the Half Year ending June 30, 1875.* *Cr.*

Manufacture of gas—				Sale of gas—			
Coals	£1,657	9	9	Private rental	£3,078	2	10
Purifying	35	6	4	Public lighting	190	16	3
Wages	216	5	11	Rental of meters	140	14	7
Repair & maintenance, works and plant	155	9	11	Residual products—			
Salaries of engineer, &c.	58	6	8	Coke	390	17	3
Distribution of gas—				Breeze	8	6	0
Salaries, inspector and clerks	51	15	0	Tar	182	7	7
Repair & maintenance, mains and services	12	15	2	Liquor	2	5	1
Repairing & renewing meters	52	1	3	Rent account	30	0	0
Public lamps—				Miscellaneous receipts	1	4	0
Lighting and repairing	49	11	7				
Rent, rates, and taxes—							
Rent	9	16	8				
Rates and taxes	61	12	5				
Management—							
Directors allowances	66	13	4				
Salaries, secretary and accountant	106	13	4				
Collectors commission	64	19	6				
Stationery and printing	40	1	9				
General establishment charges	75	15	1				
Auditor's fees	3	10	0				
Bad debts and allowances	73	6	6				
Law charges	13	5	2				
	£2,804	15	4				
Balance to profit and loss account, net revenue	1,419	18	3				
	£4,224	13	7		£4,224	13	7

Water—Revenue Account for the Half Year ending June 30, 1875.

Water bought of New River Company	£32	0	0	Sale of water	£1,493	11	1
Coals	423	8	10	Rents	10	19	2
Wages	124	2	0				
Repair & maintenance, works and plant	139	3	11				
Salaries, inspector and clerks	8	13	4				
Repair & maintenance, mains and services	26	0	2				
Salaries of engineers, &c.	29	3	4				
Rates and taxes	48	17	10				
Directors allowances	33	6	8				
Salaries, secretary, accountant, &c.	53	6	8				
Collectors commission	32	9	10				
Stationery and printing	20	0	10				
General establishment charges	39	6	9				
Auditor's fees	1	15	0				
Bad debts and allowances	44	18	11				
Law charges	6	12	7				
	£1,063	6	8				
Balance to profit and loss account, net revenue	446	3	7				
	£1,509	10	3		£1,509	10	3

Profit and Loss Account, Net Revenue, June 30, 1875.

Dividend paid to shareholders for the half year ending Dec. 31, 1874	£754	4	2	Balance brought from last account	£802	10	11
Interest on loans and mortgage bonds to June 30, 1875	607	16	0	Revenue account, gas	1,419	18	3
Balance available for dividend for the half year ending June 30, 1875	1,328	4	1	Revenue account, water	446	3	7
				Fitting account	21	11	6
	£2,690	4	3		£2,690	4	3

The CHAIRMAN said he should not have many remarks to make in moving the adoption of the report. He thought the shareholders would admit that the

affairs of the company were moving in the right direction—not perhaps quite so fast as they could wish, but not the less surely in a satisfactory manner. The directors this half year supplied the shareholders with a great deal more information as to the working of the undertaking than they had done before. The fact was that their books were better kept, thanks to their present officers, and this fact would enable those who understood the manufacture of gas better than he did, to see that the figures which the directors were enabled to furnish, compared very favourably with the accounts of other gas companies. He would not detain the meeting by going into the different items of the accounts, but he thought it would be found that in some cases the expenditure had been reduced, and that in other cases where an increase appeared, it was in consequence of the increase of business, or of the greater care which some of the officers had bestowed upon the working of the company. He was glad to say that they were having a better understanding now with their customers and with the local authorities. This, of course, would necessarily be the case, as they became better acquainted with each other. The public who resided in the company's district must feel that they had been doing all they could in finding further capital, and in giving their utmost attention to supply them thoroughly well. There was one board, the New Barnet Board, which had not shown so friendly a disposition to them as the older institutions; but he had no doubt that when they understood the questions with which they had to deal, better than they did at present, things would go on all right between them and the company. That board sent up a very curious complaint to the Local Government Board respecting the company. They stated that the water supplied by the company was bad—not fit to drink—and that there was not enough of it. The one statement almost contradicted the other, for surely, if the water was not fit to drink, the less they had of it the better. The board thought fit to have a test made of the quality of the water, and the specimen they had analyzed was taken from the cricket-field, where the water lay sometimes for a week or a fortnight together without any being drawn, and therefore it was certainly not a fair specimen of the character of the supply. The directors of this company thought it right also to have the water tested, and they sent samples to Dr. Tidy, one of the most eminent men in London. The result of his analysis would be found in the report presented to-day. A copy of the certificate of Dr. Tidy had been sent to every one in the district, and those of their customers who wanted to be reassured had, no doubt, found reassurance in that document. But, fortunately, the directors had other evidence of the goodness—the unusual goodness of the water for certain purposes. He (the chairman) had a letter, dated June 24, from Mr. Edwards, a brewer, at High Barnet, in which the writer said, "I am very pleased to tell you that the supply of water is very regular, and only while repairs were going on have I had any cause to complain. I have to thank you for the kindness you showed towards me while I was stating my trouble to you (that was when short of water), and for laying it before the board. I think it is my duty to tell you that I have been quite satisfied with the supply from Christmas last, and that my stock ales have been very good, brewed with your water; so good, that I have obtained a medal from the English and Continental Exhibition of Beer." This letter was written spontaneously, and the directors were very pleased to receive it. Messrs. Elliott and Fry, the celebrated photographers, who had an establishment in the company's district, told the directors that, for their business purposes, they could find no water so good as theirs. Mr. Metcalf also, who had a hydropathic establishment at Barnet, told them that the water from the New River would not be nearly so good for his purposes as the water supplied by the Barnet Company. Therefore, whatever some people might say, the shareholders might rest satisfied with the quality of the water. As to the quantity, there were engineers on the board who had devoted much time to the subject, and they assured them there was an abundance to be obtained from the old well. They were now raising a large additional quantity above what they formerly raised, and when the distributory arrangements were perfect—when the larger pipes were connected which they had been putting in for some time, there would be a very good supply over the whole district—in fact, the quantity of water was equal to the demands of the district for many years to come. What complaints there had been the directors had investigated rather closely, and they found that in most cases they arose from the state in which the customers cisterns were kept, from their deficiency in size for the wants of the household, or from the fittings being too small to admit of the cisterns being filled during the time the water was running. From the nature of the district there could not be a constant service, but there was plenty of water if it were only stored by the inhabitants during the hours in which it was delivered. With regard to the gas department, if the shareholders would look at the accounts, they would see that, if the company had only that undertaking in hand, the profits would enable them to divide on this occasion 5 per cent. on the A, and 4 per cent. on the B capital. It was the water department that prevented the payment of larger dividends, but the directors hoped, by a better distribution of the water, and a more careful inspection throughout the district, so as to ensure that each person paid his proper quota for the supply furnished to him, they might before long place this department on an equally satisfactory footing with the gas. It was proposed, as soon as possible, to supply the Potters Bar district with gas from the Barnet works. This would enable them to light the railway station and some other parts of the district, and there would be a much better pressure throughout the whole than could be obtained from the small works existing there. They would then sell that station, and get rid of the staff there, so that, while benefiting the public, they would be serving the interests of the shareholders. With these remarks, he moved the adoption of the report.

Mr. GLAISHER seconded the motion, and congratulated the shareholders on the improving state of their affairs. In conjunction with his colleague, Mr. Horsley, he had devoted much attention to the development of the district, which he believed to be a rich district, and one that would yield well. The misfortune was that, as regards the water department, the capital of the company was much too large in proportion to the rental; but when the improvements indicated by the chairman were effected, there would be a better return on the investment, and if they could dispose of the Finchley works, and thus lessen the capital, the company would have a very fair prospect for the future.

Mr. STOKES made inquiry as to whether the new engine referred to on the last occasion had been obtained, and whether it worked satisfactorily.

Mr. HORSLEY said he had advised the directors not to spend money upon the engine until they were in a position to utilize it with corresponding advantage, so that although the order had been given, its delivery was delayed until he, in conjunction with the engineer, Mr. Martin, had settled the way in which it should be put up. At the present moment, and until new mains were laid, the erection of the engine would be not only useless, but perhaps mischievous. They were giving more water at present in the district than was required, because, owing to the smallness of the pipes, the supply had to be kept on too many hours.

After some further explanations by Mr. GLAISHER and Mr. HORSLEY as to the improvements in the water department,

The motion was put and carried, and the dividends recommended in the report were declared.

A cordial vote of thanks to the chairman and directors closed the proceedings.

REDUCTION IN THE PRICE OF GAS.—The directors of the Phœnix Gas Company have notified that the price of gas supplied by meter will be reduced to 3s. 9d. per 1000 feet, as from Michaelmas ensuing (*i.e.*, from the date of registering the index of each meter respectively).

LANCASTER GAS COMPANY.

The Annual Meeting was held on Wednesday last—Dr. DE VITRE in the chair.

The MANAGER (Mr. W. Fleming) read the following report of the directors:—

The accounts for the past year have been duly audited, and are now submitted for your inspection and approval.

The works and plant are in good order. Various additions and extensions are now in progress to meet the steadily increasing demand for gas. The new offices and showroom in Market Street were opened on the 1st day of January last, and the directors are glad to express their satisfaction at their completion, and their belief that they will be a great convenience to the public, and prove beneficial to the interests of the company.

The profits on the past year amount to £3082 4s. 8d., which, with the balance from the last account, gives a sum of £3596 17s. 2d. available for dividend, from which your directors recommend a dividend for the year at the rate of 10 per cent., and 2 per cent. as arrears for the year 1869 (less income-tax) payable on the 1st day of September next, leaving a balance of £26 17s. 2d. to be carried forward to next year's account.

It affords your directors pleasure to announce that, owing to favourable contracts made for the supply of cannel and coal for the ensuing year, they are enabled to reduce the price of gas to private consumers from 5s. to 4s. 9d. per 1000 cubic feet, less the usual discount, the reduction to take effect from the commencement of the current year.

Your directors regret the death of Mr. James Dickinson, who for many years took an active part in the interests of the company; in consequence of continued illness, he had previously placed his resignation in the hands of the board, which was accepted by them with regret. Your directors elected Mr. Henry Gregson to fill the vacancy at the board, an election which they feel sure will meet with the approval of the proprietors.

Mr. Harrison and Mr. Roper, two of your directors, retire by rotation at this meeting, and, being eligible, offer themselves for re-election. Mr. Edmonson, one of your auditors, retires at this meeting, and, being eligible, offers himself for re-election.

The CHAIRMAN, in moving the adoption of the report, said, the company had now gone on steadily for a great number of years, and the results they were able to show were gratifying to the directory, and must be equally so to the proprietory. There was nothing in the report to call for special comment, but he must express the pleasure it afforded him to be able to announce their intention to reduce the price of gas 3d. per 1000 feet to private consumers. The directory for a long period had got the public interests as well as their own in view, and it was with the object of meeting those requirements that they made such a reduction in the price as the consumers were entitled to and the company could bear. At the same time the illuminating power of the gas was maintained with considerable strictness and accuracy by their manager, and this must be gratifying to the public, who would rather have better light even if they had to pay a trifle more for it. The 3d. per 1000 which they intended to reduce the price of gas would make a difference of about £300 a year to the company, but they hoped to recoup themselves by favourable contracts in the price of material, such as coal and cannel. When the reduction took effect the average price of gas, taking into consideration the discount given, would be rather over 4s. per 1000 feet for all consumers. At the present moment it was a gratification to be able to state that with larger towns, such as Liverpool, where the consumption was enormous, Lancaster bore a favourable comparison, and that their price was below that of Liverpool, where the gas was equally good. He knew that in Liverpool they paid the strictest attention to produce gas of the highest illuminating power, and so it was the object of their manager to maintain the highest possible quality of gas that could be produced. They were all aware that to pass an impure gas through their pipes and burners they would get a much greater profit upon a lower charge for gas, because it would necessitate the consumer burning a much larger quantity in order to get the same amount of light that he now got for a small increased value. The directors had for some years past determined, as the progress of the works went on, that the public should fully share the advantages derived from the increased consumption, and that was one of the proofs—but not the first—of their wish to meet the public in that respect. Then they were going to do another thing, which was not much, but it was a matter of equity. The shareholders would be aware that a certain class of consumers were required to make a deposit before the company supplied them with gas, and the directory intended to allow them interest on those deposits where they reached £1 and upwards. They thought that if a man deposited £5, and it remained there year by year, it was not fair to keep that sum without giving interest upon it. With regard to the works, he might say that they were in as perfect a state as any throughout the country. It was true that some of them might be undergoing changes and alterations—pulling down and building up—and on that account they might not be in that state of perfection which was desirable; but such little matters would always be going on in works like theirs. With this exception, however, the works were in an admirable condition, and they were in a position to make gas during the ensuing winter without any fear of a drawback. The chemical works were in a satisfactory condition, and the works for the manufacture of other products were also satisfactory. It was a matter of regret to the directory that Mr. Dickinson's health was such as to induce him to send in his resignation, and, as they were aware, he had since died. He was a valuable colleague on the board, had great mechanical knowledge, and was always ready to exercise that knowledge on behalf of the board. He was a good man to work with, made himself agreeable to his colleagues, and was always willing to exert himself in the interests of the company. The directors elected Mr. Henry Gregson to fill the vacancy caused by the retirement of Mr. Dickinson, and the board thought the proprietary would readily confirm that appointment. He would propose, therefore, that the report of the directors be approved and adopted.

This resolution having been seconded and carried,

The MANAGER, in reply to a question, said the money deposited by consumers, or intending consumers of gas, amounted to about £131, and was placed in the Lancaster Bank.

The CHAIRMAN then moved that the accounts be received and adopted, and that a dividend be declared of 10 per cent., and 2 per cent. as arrears for the year ending December, 1869 (less income-tax), to be paid on the 1st of September.

The motion was put and carried, and the directors and auditors re-appointed.

Mr. WELCH proposed a vote of thanks to the directors for the able way in which they had conducted the works of the company during the past year. The very satisfactory manner in which that had been done was shown when, though almost all other companies were suffering from the high price of coal, they had not to make any increase in the price of gas; and the directors were now enabled to propose that a reduction be made to consumers. As one of the auditors, all the transactions of the company came before him. They were composed of a number of accounts, and the shareholders could scarcely credit the *minutiæ* that were necessary to complete them, and it was only by the attention paid to small matters that the directors were enabled to bring out the results which they had shown them that day. He asked the shareholders, therefore, to accord to the directors a hearty vote of thanks.

The CHAIRMAN, in acknowledging the compliment, said he did so because it afforded him the opportunity of alluding to the energetic zeal and able management of Mr. Fleming, whom he believed to be second to no gas manager in the kingdom. The manager took the greatest interest in the success of the work, and brought his practical knowledge to bear on all matters affecting the company. The works were conducted with economy and efficiency, and if the shareholders knew the duties that devolved on their manager they would agree with him that they were fortunate in having such an one.

Mr. EDMONDSON said it had been his good fortune for many years now to propose a vote of thanks to Mr. Fleming, and it gave him increased pleasure each year. Their manager went on in a quiet way, giving them excellent balance-sheets and excellent dividends. Their works were model works, and the con-

sumers were satisfied that the gas they had was good, and at a reasonable price. They were deeply indebted to Mr. Fleming for his services to the company, which he hoped they would retain for many years to come.

Mr. FLEMING said that so long as he retained the confidence of the directors he should feel satisfied, and it would be his endeavour to give satisfaction to all parties.

The proceedings then terminated.

SOUTH STAFFORDSHIRE WATER-WORKS COMPANY.

The Half-Yearly Meeting was held last Thursday, at the Company's Offices in Birmingham—Mr. FRANK JAMES in the chair.

The following report of the directors was taken as read :—

The number of houses laid on during the last half year was 353.

The balance of profit on June 30, 1875, after providing for interest on loans and preference shares, amounted to £6524 8s. 2d., and your directors recommend the declaration of a dividend for the half year on ordinary shares at the rate of £6 per centum per annum, less income-tax, leaving £2210 7s. 2d. to be carried forward as undivided balance. The dividend warrants to be issued on Wednesday, Sept. 1, 1875.

The Act of Parliament promoted by the company has been passed, and the directors congratulate the shareholders on the acquisition of valuable powers by which a large supply of subterranean water of the purest description can be taken in the neighbourhood of Cannock Chase.

The new works for carrying out the provisions of the Act will be commenced without delay, and it now becomes necessary to issue new capital to be expended on these works.

Accordingly, at an extraordinary meeting to be held immediately after the ordinary meeting of shareholders this day, resolutions will be proposed for creating 6500 ordinary £10 shares (completing the amount authorized by the Act of 1866), and for conferring on the directors power to borrow on mortgage to the extent of one-fourth of the amount paid on the shares from time to time.

Dr. Profit and Loss Account, for the Half Year ending June 30, 1875. Cr.

Engine charges	£2,851	7	2	Balance brought forward, Dec. 31, 1874	£5,440	3	5	
Maintenance of works	883	11	4	Deduct amount of 27th dividend, declared Feb. 18, 1875	4,350	6	0	
Wages, turncocks, &c.	494	1	0				£1,089	17 5
Directors attendance fees	250	0	0	Half year's water-rates	20,456	6	4	
Salaries — secretary, resident engineer, and clerks	786	3	0	Service laying	295	14	4	
Collectors commission	672	2	4					
Rents	349	9	7					
Rates	667	2	2					
Income-tax	78	15	8					
Incidental expenses	213	13	2					
Current law charges	42	15	8					
Discount to landlords	324	8	6					
Allowances	266	15	6					
Bad debts	26	4	6					
Interest on loans	3,103	9	4					
Interest on preference shares	4,307	11	0					
Balance	6,524	8	2					
	£21,841	18	1				£21,841	18 1

The CHAIRMAN, in moving the adoption of the report, said that on examining the profit and loss account for the past half year it would be found that there was still a diminution in the engine charges to the extent of something like £500, arising from two causes—first, a reduction in the price of slack; and secondly, a slightly smaller consumption, the working plant being in good order. The item for maintenance of the works was also about £500 less than formerly, although during the half year they had had to spend a considerable amount in relifting pipes that had been disturbed by mining operations. The charges for rents and rates were matters over which the directors had no control; but the rents were somewhat less than last half year, when he explained that the directors had included in the amount rents which were not paid, but which had accrued up to the 30th of June, causing a temporary increase in the item, which had now returned to its normal amount. Coming to the next item—interest on loans—the shareholders would see that there was a very considerable increase. He might tell them that the increase was exceptional, and arose in this way: They had hitherto charged under this head the amount paid during the half year; but on the present occasion, in order to make their accounts additionally clear and distinct, they had included not only the interest actually paid, but the broken interest that had accrued up to the 30th of June. Next half year the item, like the one of which he had previously spoken, would return to its normal figure. When he told them that the interest which was accruing up to the 30th of June, and not paid, was as much as £954, they would see the importance of the matter. With regard to the overdrawal at the bankers, shown on the capital account, that was rendered necessary chiefly by their having to make a heavy parliamentary deposit in connexion with the promotion of the company's bill, and, as it had received the Royal Assent, the amount would in due course be returned. There had been an increase in the amount of water-rates received for domestic consumption, and a slight diminution in the amount received for the supply for trade purposes. The trade purposes for which the company supplied water not having been in a very flourishing state during the last six months, would account for this diminution. He was clear in his own mind that, notwithstanding temporary fluctuations, they might look for a constant increase in the amount of water supplied for trade purposes. The shareholders would notice that the directors proposed to pay the dividend this year less income-tax, instead of free of income-tax as formerly. They had no option in the matter, for, according to their new Act, they were prohibited from paying more than 6 per cent., so long as they maintained certain water charges in a portion of their district. They endeavoured, however, to give a sop in making the dividends payable on the 1st of September instead of at two months hence. Much against their inclination, the directors were bound to mulct them of 2d. in the pound for income-tax, but that 2d. would go to the credit of the balance which they carried forward. Since the shareholders last met, the bill which the directors were authorized to promote in Parliament had been passed, and had received the Royal Assent. It had been a very anxious time for the directors, who had had to meet opposition of a character for which they were hardly prepared. Seeing that the object of the bill was not to increase the area of the company's district, but to improve the supply, they had little reason to expect such opposition as was offered by some of the local authorities, and which had to be met with a determined front; and he did not hesitate to say that, if the parliamentary committee had countenanced the demands which were made upon them, they would have been obliged to throw up the bill—a course which, badly as they required additional water, would have been ten thousand times better than to have accepted the conditions which the opponents of the bill sought to impose. The opposition from Walsall wished for a compulsory supply for trade purposes, and at fixed charges. Parliament had already, for sanitary considerations, limited the price to be charged for domestic supply; but to impose such a limitation in connexion with the supply for trade purposes would be, considering the fluctuations in the cost of providing the supply, outrageous. Some of the opponents sought to impose the condition that all the reservoirs should be covered; but, at the same time, most inconsistently contended that the increased capital which the company asked for was in excess of the necessity. The covering of the reservoirs would have required an infinitely greater sum than that which the company sought to raise. The Sedgley opponents asked that the company should be compelled, at the instance of the local boards, to put stand-pipes at such places as those boards might direct, for supplying the poor with water at half the cost at which it was supplied to the largest consumers. The local boards were, in a great many instances, composed of landlords; and they wanted, at the expense of a public company, earning only a moderate amount for a very large outlay, the provision of water for the tenants of their houses, in order to relieve themselves of the expense. After alluding to the Dudley and Tipton opposition, the result of which was that, until the differential rates charged to those districts were reduced to the level of the charges in other districts, the company should not pay more than 6 per cent. dividend, he pointed out that the other concessions which had been gained by opponents were very small matters as regarded the convenience and prosperity of the company. On the whole, he congratulated the shareholders on the result of their parliamentary proceedings. The new powers, when their works were completed, would enable the company successfully to grapple with all the demands made upon them, and enable them to give the district such a supply of water as would be excelled in no district in England. He spoke of the opposition they had met with from private sources, and showed that the concessions they had had to make to Walsall were not serious ones, as they were already well able to raise water on high pressure to every part of the town, and that they would have to bring their new main through Bloxwich, which hamlet they had to supply. He pointed out the great advantages resulting from their application to Parliament, and said that they had reason to believe their new district at Cannock and Huntingdon would afford as much water as they would ever require—water, too, of an even more excellent quality than that at Lichfield.

Mr. R. WILLIAMS seconded the adoption of the report, which was agreed to.

Upon the motion of the CHAIRMAN, seconded by Mr. J. N. BROWN, resolutions were passed declaring the usual preference dividends, and a dividend on the ordinary share capital of the company at the rate of 6 per cent. per annum, less income-tax, the warrants for the payment of the same to be issued on Wednesday, the 1st of September.

An extraordinary meeting was then held with reference to the creation of additional share capital, and, after some explanatory remarks by the CHAIRMAN, resolutions to the following effect were adopted:—That, in pursuance of the powers contained in the South Staffordshire Water-Works Act (1866), there be created 6500 new ordinary shares of £10 each; that such new shares form part of the general capital of the company, and entitle the holders to ordinary dividends rateably with the existing ordinary or original shares, and be subject to the same conditions, and confer the like rights of voting and qualification as the ordinary or original shares; that such new shares be offered *pro ratâ* at par to the proprietors of the existing ordinary or original shares in proportion to the present holdings; that the number remaining of such new shares after allotment of those accepted under the previous resolution be disposed of by the directors in such way as they may think fit; that the calls on such new shares be made at such times and of such amounts as the directors may determine, &c.

The proceedings terminated with a vote of thanks to the chairman and directors.

ROCHESTER WATER-WORKS COMPANY.

The Half-Yearly Meeting, followed by an Extraordinary Meeting, was held on Tuesday, the 17th inst.—Mr. J. BAIRD in the chair.

The following report was presented:—

The directors, in presenting the balance-sheet and accounts for the half year ending June 30, 1875, have the gratification to report the continued and satisfactory progress of the company, the receipts for the past half year being £312 2s. 11d. in excess of the previous one, and there is every prospect of the revenue continuing to increase.

The directors recommend that a dividend at the rate of 6 per cent. per annum (free from income-tax) be declared upon all shares for the half year ending June 30, 1875, such dividend to be payable on and after the 20th of September next.

The directors also recommend that the sum of £300 be taken from the balance of profits and added to the reserve-fund for contingencies, and that the balance of £564 9s. 11d. be carried forward to the next half year's account.

The two original boilers have done good service, and as they are no longer equal to the work, it has been considered necessary to replace them with two new and larger boilers.

The directors have, therefore, entered into a contract to be supplied with two new boilers of larger dimensions, which are to be constructed upon an improved principle, so as to effect a greater economy in the consumption of fuel.

The extension of the company's works at Luton to obtain a further supply of water is still in progress; but, in order to reach the lower level at which it is proposed to make the new headings, it has been necessary to procure additional machinery to pump out the water, which accumulates very rapidly in the new wells.

One of Hayward and Tyler's Patent Universal Steam-Pumps has been purchased for this purpose, and set to work, and has so far proved to be a most efficient and economical pumping-engine.

The portable engine machinery has also been considerably strengthened and improved, and the directors hope that there will now be sufficient pumping power to keep out the water, so that the work may proceed without further delay.

Inasmuch as the question of raising further capital will be entered into at the close of the business of this meeting, the directors refrain from making any further allusion to it in this report, so as not to preclude the shareholders from fully discussing the subject at the extraordinary meeting called for the purpose.

From the statement of accounts it appeared that the profits for the six months ending the 30th of June amounted to £1441 7s. 8d. There was a reserve-fund of upwards of £3300.

The CHAIRMAN said they would observe that the earnings showed an increase of £312 during the last over those of the preceding half year; and he supposed the shareholders would be quite willing to give the usual 6 per cent. dividend, and add the £300 to the reserve-fund. He moved the adoption of the report.

Mr. TAYLOR seconded the motion, which was carried unanimously.

On the motion of the CHAIRMAN, seconded by Mr. H. FOSTER, it was resolved that the sum of £300 be placed to the reserve-fund, and that the balance, £564 9s. 11d., be carried forward to the next half year's account.

An extraordinary meeting was then held, the object being "To consider as to raising the sum of £5000, further part of the additional capital by the Special Act of 1868 of the company authorized to be raised, and, if so resolved, to authorize the raising of such additional capital of £5000 by the creation and issue of new ordinary shares of £5 each, at a premium of £1 per share, or at such other premium as the meeting may think proper and determine on."

The following report from the directors upon this proposal was read by the secretary:—

It is now about seven years since the first issue of new shares took place under the powers given to the company by their second special Act of Parliament which was obtained in the year 1868, and by which the company was authorized to raise additional capital as should from time to time be required.

During this period the business of the company has considerably increased, the present income being nearly £4000 per year more than in 1868.

Many valuable and important additions have since been made to the plant at the company's works at Luton, and some miles of mains and service-pipes have been laid to the numerous and constantly increasing consumers in the several towns comprised within the company's district.

Upon reference to the capital account it will be seen that the whole of the capital raised has been expended and the account overdrawn to the amount of £382 16s. 7d.

One of the mortgages for £700 has been called in by the mortgagees, and the same has been paid off by the company since the close of the last half year; the capital account therefore now stands indebted to the extent of about £1100.

To meet these liabilities, and to provide funds for carrying out the new works and for the further extension of mains and services, it is necessary that an additional amount of capital should be raised.

The directors have consequently given the requisite notices for effecting this object, and now recommend that the sum of £5000 be raised by the issue of new ordinary shares at a premium of £1 per share, and that the same be offered to the shareholders in proportion to the existing shares held by them respectively. That the sum of £1 premium and £1 on allotment be payable the 1st of October next, and the first call of £1 per share to be payable on the 1st of January, 1876, and that the several before-mentioned sums be paid into the London and County Bank at Chatham to the credit of the company's account, and to be entitled to dividend at the same rate as the original shares, from the dates when the instalments respectively are paid.

And that the sum of £1000, the premium on such new shares, be placed to the credit of the reserve-fund for contingencies.

The balance of £3 per share to be called up as the directors may think fit, the amount of such calls not to exceed £1 per share, and of which three months notice shall be given.

The directors confidently recommend this course to the shareholders as best calculated to promote their interests and materially increase the prosperity of the company.

The CHAIRMAN, in proposing the adoption of the report, remarked that if they issued the shares there would be no difficulty in disposing of them, as the shares were now at a high premium. As to the position of the company, they had paid off the preliminary expenses in getting their Act of Parliament, &c., and there was nothing now but the absolute plant that the capital represented; still the directors felt they could no longer proceed without having additional capital, and considering that their income was now some £4000 a year in excess of what it used to be, the directors thought they were only doing right in making the recommendation to the shareholders. As stated in the report, £700 had been called in by a mortagee; the money had been taken from the deposit account, and would have to be replaced as soon as the new shares were taken up. They had nothing to fear that the shares would not be taken up, as they already had people asking for more than could possibly be allotted them.

After a long discussion it was decided that the £5000 should be raised in the manner set forth in the report.

Votes of thanks having been passed to the chairman and board of directors, the secretary and other officers of the company, and to the auditors, the proceedings terminated.

IRON AND COAL TRADES OF SHEFFIELD, SOUTH YORKSHIRE, AND NORTH DERBYSHIRE.

(FROM OUR OWN CORRESPONDENT.)

There has been a little more work this week at the foundries as also at some of the iron-works at which specifications for heavy materials are dealt with. It cannot be said, nevertheless, that there is any appreciable revival of trade, it being quite possible that the slight augmentation of activity of which I have just spoken is purely the result of the partial stoppage of work in the preceding week. Prices are, however, now gradually weakening in every direction, so that there would appear to be some probability—even if a distant one—of a revival upon the sure foundation of low prices, and a renewal of confidence between producers and their customers.

Pig iron of local make ranges from £3 2s. 6d. to £3 5s. per ton. It is being consigned to Staffordshire and Lancashire houses, now that the Sheffield and South Yorkshire demand is too low to keep the Derbyshire and district furnaces in anything like full operation.

The agents of north country pig iron producers now quote the following figures, by which it will be noticed that foundry irons are well maintained in price for the time being:—No. 1 foundry, 55s.; No. 2 foundry, 52s.; No. 3 foundry, 51s. to 52s. 6d.; No. 4 foundry, 48s. to 49s.; No. 4 forge, grey, 47s.; No. 5 forge, mottled, 46s. 6d.; No. 6 forge, white, 46s.; refined metal, 67s.; Kentledge, 55s.; and cinder pig 40s., all on the customary net cash terms.

The brassfoundries at Rotherham and Sheffield are very steadily engaged; in fact, in no branch of industry has there been more unvarying and ample employment for months past than in this. The run is chiefly upon bib and hot water-taps, closet valves and levers, general plumbers fittings, water-meters, and steam-fittings of all descriptions.

The coal trade is as quiet as it possibly can be. The competition is very severe, and prices are run down to so low a level that profits can hardly be secured. Good steam coal varies from 6s. to 12s. 6d. per ton—a tolerably reliable sort being obtainable at about 8s. 6d. for engine uses. House coal varies from 9s. to 14s. per ton, and is almost wholly neglected by consumers, at present.

IRON AND COAL TRADES OF SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE.

(FROM OUR OWN CORRESPONDENT.)

The course of business this week has been most unexpectedly interrupted by a renewal of the labour dispute. It appears that the operatives have, without any previous intimation, rejected the award of the arbitrators in respect to the scale of pay for certain "extras," in which an effort had been made to assimilate the rates of the North of England and South Staffordshire, and the question will now have to be rediscussed; meanwhile, but comparatively few of the men remain at work, and the loss to some of the ironmasters will be considerable. The conduct of the men in this matter has done much to shake public confidence in the efficacy of the principle of arbitration for the adjustment of labour disputes.

The usual weekly meetings of the trade, though well attended, have not resulted in much business, neither buyer nor seller caring to negotiate to any extent in the present unsettled state of affairs. In pig iron the market is decidedly flat, in consequence of the continued and extensive importations of pigs from other centres of production, makers of the commoner qualities are especially loud in their complaints of the dulness of trade and stocks are rapidly accumulating, there appears to be again a growing disposition to restrict production, though the number of furnaces now blowing is only 70, being 40 less than the number in operation five years ago. There is no change to report in quotations, prices being already unremunerative to local makers. In finished iron the demand is only quiet, with a tendency to lower quotations. Branded iron is still firm, on the basis of £10 per ton for bars, and some makers are tolerably well supplied with orders. Common qualities of merchant iron vary from £8 to £9 per ton for bars, and sheets are quoted £10 10s. to £11. There is still a moderate inquiry for sheets on account of the colonial markets, but the demand is by no means active in any department of the trade.

In the coal trade the demand for the best qualities of thick coal is moderately active, and prices are well supported; but the commoner classes of fuel are only in restricted inquiry, and quotations have a somewhat easier tendency. The prices of thick coal, west of Dudley, are, for best, 16s.; seconds, 11s.; lumps, 10s.; slack, 3s. 6d. per ton, loaded into boats or trucks at the various wharves and collieries. The stoppage of supplies from the Warwickshire coal-field, consequent upon the protracted strike of miners in that district, has had no appreciable effect upon the local markets, the supply here still being somewhat in excess of the demand.

The wrought-iron tube and fitting trades at Wednesbury are without much improvement since last notice, and circumstances do not favour the hope of an early return to anything like its normal condition; for some classes of fittings the demand is steadier, but in no department of the trade is there much activity displayed.

THE COAL AND IRON TRADES OF LANCASHIRE.

(FROM OUR OWN CORRESPONDENT.)

A trifle more animation continues to be manifest in the coal trade of this district. All the better qualities of coal are now tolerably firm in price, and merchants, as a rule, can only place their contracts at the list rates, the reductions of 6d. and 9d. per ton, which a short time since were made to secure large orders, being now only obtainable in exceptional cases. Common sorts of coal, however, are still offering freely at rather low prices, and continue a drug in the market.

Common classes of gas coal are still difficult to sell in the Wigan district, but the better descriptions have been tolerably well sold.

The coke trade continues quiet, and the Manchester Corporation Gas-Works have found it necessary to make a considerable reduction in their prices.

There is still very little doing in the iron trade of this district, but prices of pig iron nominally are stiffer. Merchants are asking more money; No. 3 Middlesbrough foundry, delivered in this district, being now quoted at 60s. per ton; No. 4 foundry, 58s. 6d.; and No. 4 forge, 55s. 9d. per ton. At these figures, however, there are no buyers; other makes of iron competing below them. Manufactured iron remains without any material change from the prices last quoted.

There is a good deal of uneasiness in the engineering trade of Lancashire, with regard to the action of the men. In consequence of the action taken by the Amalgamated Society of Engineers with regard to the rate of wages in different parts of Lancashire, and by attempting to establish the principle of fixing a minimum rate of wages—viz., 34s. per week of 54 hours—I understand the members of the Iron Trades Employers Association in Lancashire, in view of the present depressed state of trade, are considering the propriety of a common course of action in several important towns in the Manchester district, and have issued notices for a meeting of the association to be held this week, when some definite step will be agreed upon. During the last twelve months, it is stated that 1200 unemployed workmen have applied for work in the district, and the employers consider that under these circumstances an advance of wages is out of the question. It is therefore not improbable that the agitation which has been going on amongst the men in Bolton, Ashton, Hyde, Stalybridge, Dukinfield, &c., may be extended to a much larger area.

The local committee have now nearly completed their arrangements for the visit of the Iron and Steel Institute to this district next month, and the meeting promises to be a most successful one.

THE COAL AND GENERAL TRADE OF THE NORTH OF ENGLAND.

(FROM OUR OWN CORRESPONDENT.)

The demand for household coals has been rather better this week. Prices in the London market are now such that seconds, which have for some few weeks been sold at a loss, are now clearing working expenses. There has been a fair demand for the coast. Prices may be quoted for first-class households, 14s. to 15s.; seconds, 11s. to 13s.; gas, 8s. to 10s.; unscreened, 7s. 6d. to 9s.; nuts, 7s. to 8s.; small, 4s., in the Tyne or Wear. Manufacturing coals are still a drug in the market, and much larger quantities are now lying at the collieries than is usually the case at this time of the year. Work will shortly be recommenced at Thornley Colliery, one of the largest in the county of Durham, which has been off for some months, owing to the heapstead having been burnt down.

The failure of Messrs. Shaw and Thomson, of London, has fallen rather heavily upon the Northern iron trade. It has led to the stoppage of a limited liability company at Stockton, which have been rather unfortunate in their transactions for some time past. Several firms are creditors of one or other of the estates, but they are houses of undoubted and first-class standing.

TRADE NOTES FROM SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Another municipal gas project is now beginning to take shape, the scene of operations this time being the "lang toon" of Kirkcaldy, in Fifeshire, the birthplace of Adam Smith, who may be called the father of modern political economy, and whose name may by some persons be brought into the proposed scheme. It is intended by the Town Council of Kirkcaldy to apply in the next session of Parliament for powers to obtain an extension of the burgh boundaries, and as part of the bill they propose to ask for powers to take over the gas supply, should a mutual agreement between them and the gas company not be previously effected.

At Burntisland, which is not very far away from Kirkcaldy, there is a little interest at present in the gas question. Recently the North British Railway Company, to whom the gas-works at that town belong, announced their intention of reducing the price of gas supplied to the community to 6s. 8d. per 1000 cubic feet, from which it was raised when coals were at their high rate. Owing now, however, to the relations between the railway company and the burgh authorities having got into an unsatisfactory condition, on account of the difficulties into which the dock had got, which the two parties had conjointly engaged to construct, the railway company have refused to carry out their voluntary promise to reduce the price of the gas, and, as a consequence, much indignation is being expressed by the consumers, and several of them are combining to resist payment.

The Greenock Water Trust, at their last monthly meeting, resolved to impose an assessment of 9d. in the pound of rental for the domestic rate, and 1½d. in the pound for the public rate, being the same as in the past year. They only fixed the rate for consumers of water by small meters at 5d. per 1000 gallons, which is a reduction of 2d., as compared with last year's charge. It was reported by the Finance Committee that the revenue was estimated at £22,462, and that the expenditure, as estimated, would leave a balance of £22 in favour of the trust. At the same meeting it was reported by the superintendent that, on the 14th inst., the reservoirs contained 249,654,900 gallons of water, being equal to 71 days supply for all purposes to the town.

Since last report the pig iron market has been somewhat stronger, especially on Wednesday last, when a few lots were sold at 64s. 3d. and 64s. 4½d. cash, the closing quotations being 64s. 3d. buyers, and 64s. 4½d. sellers. On that day also Messrs. Baird and Co. reduced their Gartsherrie and Eglinton brands 1s. per ton all round; and in the afternoon the Carron Company's brands were reduced in price 1s. 6d. per ton, whereas the Coltness brands were advanced 1s. per ton. The market has not been just so strong since Wednesday, and prices have fallen a little. It is reported that the pipefounders are refusing orders, but generally the allied trades are dull—some of them, indeed, are very dull. Last week's shipments amounted to 11,656 tons, as against 7618 tons in the corresponding week of last year, the total increase for 1875 being 88,223 tons.

The coal trade is in almost a hopeless state in the Glasgow district and the West of Scotland generally. Prices are showing no very marked tendency to advance. Some of the miners, on the other hand, are moving towards getting an advance of wages. In Fifeshire and other places on the east coast of Scotland there is a better condition of things. There have lately been some large shipments.

NEWARK GAS COMPANY.—At the half-yearly meeting of this company on the 21st inst., the report of the directors showed that the net balance for the half year ending the 30th of June was £1888 5s. 0½d. The directors recommended that a dividend of 7s. per share upon the class A shares, and new ordinary shares, be declared, being at the rate of 7 per cent. per annum, and that 5s. per share be declared upon the class B shares, being at the rate of 5 per cent. per annum, and that the balance be dealt with as the meeting of the shareholders may decide. The number of new services laid down during the past year was 12. There had been an increase of £163 5s. 4d. in the private consumption over the last half year. The number of hours during which the public lamps had been lighted in accordance with the scale of the urban sanitary authority, was slightly in excess of that during the previous half year. The quantity of coal carbonized during the past half year was 1398 tons, as against 1286 tons for the corresponding half of last year. A new bed of five retorts was in process of completion, which would make the now available number 50. There had been an increased quantity of coke sold of 77 tons, as compared with the half year ending the 30th of June, 1874. The extention of mains up to the plaster-works on Beacon Hill, and to Mr. Bailey's foundry, on the Farndon Road, had been completed; and enlargement of mains from Appleton Gate to North Gate, and also for a considerable distance in

North Gate, had also been made, which would fully enable the company to meet the increased demand for gas in that locality. Provision had recently been made for supplying the stall-keepers in the market-place with gas, which it was considered will prove a great boon to them. The directors stated that they would be glad to be guided in some measure by the opinion of the shareholders with respect to the time when a reduction in the price of gas should take place, as no doubt it would be felt that such reduction should shortly be made. Another subject which would also demand the consideration of the shareholders was that with reference to the mortgage debt owing by the company, as the time seemed to have now arrived when either the whole or a portion of it should be paid off. The credit side of the revenue account showed—By balance, £1280 19s. 1d.; by tar and residuals, £146 2s. 2d.; by coke, £373 4s.; by private consumption. £2549 9s. 7d.; by public lamps consumption, £155 13s; miscellaneous receipts, £9 6s. 3d.; making a total of £4514 14s. 1d.

INTERESTING DISCOVERY.—A week or two ago a curious subterranean building was discovered under the carriage-way in the middle of Oxford Street, London. The Marylebone Vestry having resolved to lay down wood paving throughout a portion of this important thoroughfare, directions were sent to the gas and water companies to make all necessary repairs to their mains before the paving works commenced. As the workmen in the employ of the Chartered Gas Company were laying down a main-pipe opposite Stratford Place, they came into contact with some brickwork. This was subsequently found to be the crown of the arch of a massive brick subterranean building, containing several rooms. A correspondent of a daily paper states that these substructures played an important part in the history of old London, they being the remains of the old reservoir, whence the great conduit, set up in Cheapside early in the 13th century, was supplied with water. That water came from the gravelly subsoil where Hanover, Cavendish, Grosvenor, and Portman Squares, and the adjacent streets, now stand. Here nine springs oozed out of the ground at various places, and trickled down the grassy slopes into a watercourse called the *Tye-bourne*, which then ran through this district from St. John's Wood to the Green Park, and thence into the Thames just above where Vauxhall Bridge is built. In 1216 the Mayor and Corporation of London collected these springs into some reservoirs, which they constructed near Stratford Place, and they laid a 6-inch lead pipe from them to Charing Cross, along the Strand and Fleet Street, over the bridge which then spanned the river Fleet and up Ludgate Hill to the conduit at the west end of Cheapside. The head of water in the reservoirs was about 30 feet above the conduit mouth. The king used his influence with the owner of the lands whence the springs issued to grant the water to the corporation; and certain merchants of Ghent, Bruges, and Antwerp provided the lead pipe, or the money to purchase it, in consideration of the goods which they imported into London, being exempt from river dues or tolls for a term of years. For the King's service in the matter, the corporation permitted him to lay a pipe of the size a goosequill from the main-pipe into his stables, which were situated where the north-east part of Trafalgar Square now stands. Subsequently the corporation set up a conduit in Fleet Street, which they supplied with water by a half-inch pipe from the 6-inch main. The mayor and corporation with their friends used to visit the springs and reservoirs with much ceremony yearly for many generations. On these occasions the company used to hunt a hare or a fox in the neighbouring fields, and afterwards dine together near the reservoirs. But in course of time the reservoirs were arched over, and a large banqueting-house was erected upon the arches. The underground buildings recently discovered are the reservoirs and arches in question. This was the origin of supplying London with water by a pipe from a distance.—(*Vide* Stow and other historians of London).

The GRAND MEDAL of MERIT at the VIENNA EXHIBITION has been AWARDED to

GWYNNE & BEALE'S PATENT IMPROVED GAS-EXHAUSTERS,

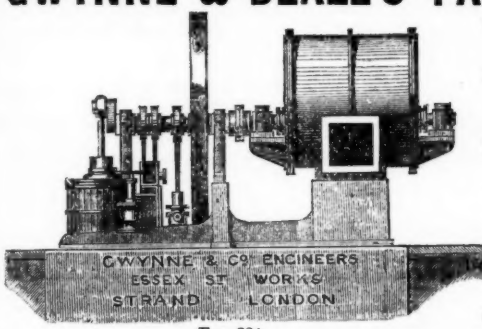


FIG. 224.

The BEST EXHAUSTERS IN THE WORLD.

Made under the personal superintendence of

Mr. BEALE,

The oldest Maker, Inventor and Patentee of

GAS-EXHAUSTING MACHINERY.

(It is NOT CORRECT to state that Mr. BEALE has RETIRED.)

Prices and every information on application.

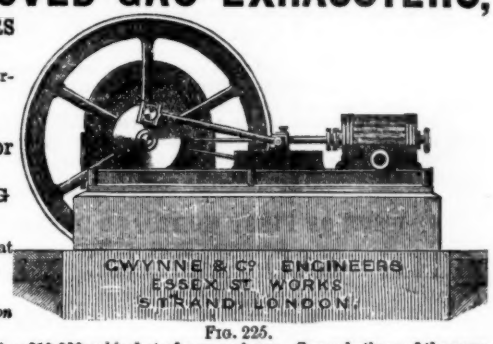


FIG. 225.

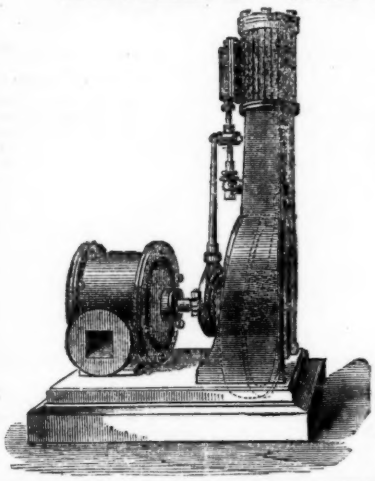
Fig. 224 represents one of those erected at the Imperial Gas-Works, Bromley, capable of passing 210,000 cubic feet of gas per hour. Several others of the same size are now on order for the same Company. These Patent Machines combine the highest quality of workmanship and materials, the largest bearings and wearing surfaces, with the **most perfect system of action yet discovered.** Fig. 225 represents one of a series of four at the Nottingham Gas-Works, each passing 52,500 cubic feet per hour. GWYNNE AND CO. *do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, but to produce Machinery of the very highest quality, and the most approved design and arrangement.* Their prices have been estimated with a due regard to the **excellence of the article produced,** and when this is taken into consideration, they have no fear for the result. The orders executed this season for Exhausters and alterations to their patented system amount to over 4,000,000 cubic feet of gas passed per hour, and to over 300 horse power for Engines to drive them. In every instance their work is giving the greatest satisfaction. Numerous testimonials and references can be given.

REGULATORS, BYE-PASSES, STOP-VALVES, GAS-VALVES, & MACHINERY FOR GAS MANUFACTURE, OF ALL SIZES,
CAN BE HAD ON APPLICATION TO

GWYNNE & CO., HYDRAULIC & GAS ENGINEERS, ESSEX STREET WORKS, STRAND, LONDON, W.C.

G. & Co. are now manufacturing for a London Gas Company three of their 210,000 cubic feet Patent Gas Exhausters, and many of all sizes.

BEALE'S IMPROVED PATENT GAS-EXHAUSTER



WITH

ENGINE COMBINED

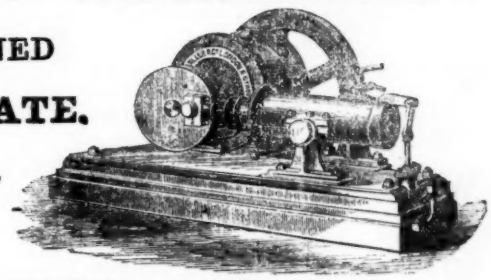
ON

ONE BASE PLATE.

SOLE MAKERS,

GEORGE WALLER & CO.,

Who, since Mr. BEALE'S retirement, are the Oldest Makers.



EXHAUSTERS with HORIZONTAL ENGINE combined.
EXHAUSTERS with OUTSIDE BEARINGS.
MAKERS of ENGINES, BOILERS, and GAS MACHINERY.
TAR, LIQUOR, and SYPHON PUMPS. GAS-VALVES in stock, 2 to 30 inches.
SELF-ACTING BYE-PASS VALVES, with Lid and Relieving Lever.
MANN'S and many other descriptions of WATER DISTRIBUTORS.
SCRUBBERS, PURIFIERS, and CONDENSERS.
EXHAUSTERS from 3000 to 60,000, new and second hand, in stock.

PHŒNIX ENGINEERING WORKS, HOLLAND STREET, S.E., & at STROUD, GLOUCESTERSHIRE.

D. BRUCE PEEBLES & CO.,

ENGINEERS,

FOUNTAINBRIDGE WORKS, EDINBURGH,

MANUFACTURERS OF **WET AND DRY GAS-METERS;**

Patentees and Sole Manufacturers of PEEBLES' LAMP-GOVERNORS,

ABOVE 30,000 OF WHICH ARE NOW IN USE.

"These Lamp-Governors are so superior that they are likely to supplant all others."—*Dr. Wm. Wallace, F.R.S., F.C.S.*

D. BRUCE PEEBLES AND CO., FOUNTAINBRIDGE WORKS, EDINBURGH.

Messrs. ALEXANDER and CO., of 7, Tokenhouse Yard, invite Subscriptions for £35,000 First Mortgage Debentures of

THE SAO PEDRO BRAZIL GAS COMPANY, LIMITED.

Total of Issue, which cannot be exceeded, £55,000, in Debentures of £100 each, payable on Jan. 1, 1879, and bearing Interest at the rate of 8 per cent. per annum, constituting a first charge upon the entire Undertaking.

Of these . . . . . £20,000 are subscribed for.
And the balance of . . . . . 35,000 are now offered.

Total of First Mortgage Debentures . . . £55,000

The Company was incorporated in England in March, 1871, under "The Companies Acts, 1862 and 1867," and is duly registered in Brazil under Imperial Decree.

THE SHARE CAPITAL PAID UP IS £103,130, IN 20,626 SHARES OF £5 EACH.

Chairman.—The Hon. HOWE BROWNE (*Deputy-Chairman, Chartered Gas Company*).

Bankers.—THE LONDON AND COUNTY BANK. **Secretary.**—E. P. ROWSELL, Esq.

OFFICES.—60, GRACECHURCH STREET, LONDON, E.C.

This Company owns the Gas-Works of the important towns in Brazil of—1, Porto Alegre (the capital of the Province of Sao Pedro); 2, Pelotas; and 3, Rio Grande do Sul, containing together a population of between 60,000 and 70,000.

The concession, dated Dec. 4, 1867, confers exclusive privileges for a period of 30 years. At the end of this term the Government have the option of purchasing the works at a valuation, or of renewing the concession.

The works are completed, and comprise 45 miles of mains and 1250 public lamps.

They were executed by Mr. George Bower, of St. Neot's, and the Engineer was Mr. Alfred Upward, C.E., a late engineer of the Chartered Gas Company.

The total expenditure of the Company has been upwards of £160,000.

The existing gross revenue from the present number of public lamps, the payment whereof is guaranteed by the Government of the Province of Sao Pedro, is about £12,000 per annum.

The present issue of mortgage debentures is limited in amount to £55,000, and constitutes a first charge upon the whole undertaking of the Company, and the rates and income arising from the public and private lighting.

The debentures will be issued to bearer in sums of £100, and the interest be payable half yearly, on presentation at the Company's Bankers of coupons attached to the debentures.

ISSUE OF FIRST MORTGAGE DEBENTURES OF £100 EACH, BEARING INTEREST AT 8 PET CENT.,
OF
THE SAO PEDRO BRAZIL GAS COMPANY, LIMITED.

FORM OF APPLICATION.

To MESSRS. ALEXANDER AND CO., 7, TOKENHOUSE YARD, BANK, E.C.

GENTLEMEN,—I hereby request that you will allot me Debentures of £100 each in the above Company, and I agree to accept such Debentures, or any smaller number that may be allotted to me, and to pay the full amount thereof upon receiving from you notice of allotment.

Name in full .....
Address in full .....
Profession or occupation .....
Signature .....
Date .....

WANTED, by the Wrexham Gaslight Company, a GAS-FITTER; also a METER INSPECTOR.
State wages required, also age and references.

WANTED, by a middle-aged Man, with 18 years experience with one of the largest Gas Companies, a situation as CLERK or Inspector. Good references and testimonials.
Address W. S., Lowlands, Aston Lane, BIRMINGHAM.

WANTED, a good Stoker, to take the night charge of a small Gas-Work. House, firing, and 26s. per week will be given to a steady man.
Apply to W. H. RITSON, Annfield Plain Gas-Works, near NEWCASTLE-ON-TYNE.

LEEDS CORPORATION GAS-WORKS.

WANTED, Fifty good Stokers. Wages 35s. per week.
Apply to the MANAGER. By order,
CAPEL A. CURWOOD, Town-Clerk.
Aug. 30, 1875.

WANTED, the Management of a Gas- Work, where a day stoker is kept preferred. Understands engine and exhauster, laying mains, services, and fixing meters, &c.; or as an Assistant Manager of a large Gas-Work.
Address No. 191, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, a situa- tion as MANAGER of small Gas-Works. Qualifications: Stoking, main and service laying, meter taking, fitting, &c. Twelve years experience at home and abroad. Good testimonials. South Wales preferred.
Address No. 189, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WORKING MANAGER Wanted, to take entire charge of a small Gas-Work. Must understand the manufacture and distribution of gas, also laying mains and services, taking indices of meters, with a little knowledge of fitting. House, fuel, and gas free.
Address, with terms and references, the SECRETARY, Cardigan Gas Company, 22, Quay Street, CARDIGAN.

NEW EDITION, NOW READY,

ADVANTAGES OF GAS FOR COOKING AND HEATING.

By MAGNUS OHREN, A.I.C.E., F.C.S.

For Companies to issue to their Gas Consumers.

Specimen Copy by post Threepence, direct from MAGNUS OHREN, Gas-Works Lower Sydenham, London, S.E.

WANTED, by the Advertiser, aged 23, a re-engagement as CLERK or Assistant Clerk to a Gas Company. Good knowledge of book-keeping, meters, photometer, and routine of a Gas-Work.
Address W.C., care of Mr. Perry, 1, Church Street, High Orchard, GLOUCESTER.

ASSISTANT ENGINEER.

WANTED, in a provincial Gas-Work, the services of a gentleman as ASSISTANT ENGINEER. He must be a good draughtsman, and well acquainted with the modern principles of making and purifying gas. Salary £200 per annum.
Apply, by letter, to 192, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C., on or before the 20th proximo.
Aug. 24, 1875.

ASHFORD GAS AND COKE COMPANY, LIMITED.

WANTED, a thoroughly practical Man as MANAGER, who understands the manufacture of gas, and will superintend the laying of mains and fittings, and index takings, attend to the resetting of retorts, and generally manage the works and make himself useful. No one but a practical person need apply.
Applications, by letter, stating age and salary required, with testimonials, to be addressed on or before the 18th of September next, to Mr. F. HUGHES HALLETT, Ashford, KENT, the Secretary of the Company.
Aug. 24, 1875.

GAS-FITTER Wanted. Wages 30s. per week. Permanent situation to a suitable person. Preference given to one who could do a little smith's work. None but steady competent men need apply, as the strictest investigation will be made.
Apply to J. DAVIES, Gas-Works, Kidsgrove, STAFFORDSHIRE.

COAL TAR AND AMMONIACAL LIQUOR.

THE Gloucester Gas Company invite TENDERS for all the surplus TAR and AMMONIACAL LIQUOR produced at their works, for a period of One or Three years, as may be agreed on.
Particulars on application to the undersigned.
The Company do not bind themselves to accept the highest or any tender.
R. MORLAND, Engineer and Manager.
Gas-Works, Gloucester, Aug. 27, 1875.

TO MANUFACTURING CHEMISTS, TAR DISTILLERS, AND OTHERS.

THE Directors of the Elland-cum-Greet- land Gas Company are prepared to receive TENDERS for the AMMONIACAL LIQUOR produced on their works for One or Three years, from the 21st day of November next.
Tenders to be sent to the Gas Office, Elland, on or before Friday, the 3rd day of September next.
W. A. WALKER, Secretary.
Gas Office, Elland, Aug. 23, 1875.

SURREY CONSUMERS GAS COMPANY.

NOTICE is hereby given that the HALF-YEARLY ORDINARY GENERAL MEETING of the SHAREHOLDERS of this Company will be held at the Terminus Hotel, London Bridge, Southwark, on MONDAY, the 4th day of October next, at Three o'clock in the afternoon precisely, to receive the Directors Report for the half year ending the 30th of June last, and to declare a Dividend.
The Register for the Transfer of Shares will be closed on Monday, the 20th of September, until the day of Meeting.
W. P. BODDY, Secretary.
Rotherhithe, Aug. 23, 1875.

COMMERCIAL GAS COMPANY.— NOTICE is hereby given that the next ORDINARY MEETING of the Company will be held at the London Tavern, Bishopsgate Street, in the City of London, on FRIDAY, the 1st day of October next, at Twelve o'clock at noon, to receive the Report of the Directors, and to declare a Dividend to the 30th day of June last.
The Books of the Company will be closed for the Transfer of Stock from the 16th day of September until the 1st of October now next ensuing.
By the Company's Act of Incorporation, the holders of Stock can inspect the Books of the Company during one fortnight before and one month after the Meeting.
By order of the Board,
GEORGE JAQUES, Secretary.
Stepney, Aug. 23, 1875.

GAS CONDENSERS FOR SALE, upright 6-in. pipes and chest, in good order.
Apply to WILLIAM MARR, Gas-Works, LINLITHGOW, N.B.

SMALL Gasholder Wanted, second hand, 15 to 20 ft. diameter. For erection in London.
State lowest price to No. 193, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

FOR SALE—A combined Purifier and CONDENSER, with centre change-valve, suitable for 300 lights. Extreme size 7 ft. 5 in. by 6 ft. by 3 ft. 1 in. high.
Apply to the BRYMBO COMPANY, near WREXHAM.

ROCHDALE CORPORATION GAS-WORKS.

THE Gas Committee invite Tenders from parties willing to supply and fix a Telescopic GAS-HOLDER, 100 ft. in diameter and 30 ft. deep, to be completed during the month of August, 1876.
Plans and specifications may be seen on application to the Engineer, Mr. Samuel Hunter, Assoc. Inst. C.E., Gas-Works, Rochdale.
Tenders to be sent to my office on or before the 14th day of September next, endorsed "Tender for Gasholder."
The Committee do not bind themselves to accept the lowest or any tender.
By order,
ZACH. MELLOR, Town-Clerk.
Town-Hall, Rochdale, Aug. 26, 1875.

C. & W. WALKER,
8, FINSBURY CIRCUS,
LONDON, E.C.

MANN & WALKERS' PATENT SCRUBBER.

By Letters Patent in Great Britain, Europe, and the United States of America.

The improvements made during the past three or four years in all the parts of the internal and external construction and machinery of these Scrubbers have rendered them perfect for their work] of purification with all kinds of coal, and their cost is less than any other method of completely purifying gas from ammonia.

They contain their own motive power, requiring only a small inappreciable quantity of steam from the gas-works boiler, and are then complete in themselves, ready for service.

They are, in all cases, constructed under guarantees to perfectly perform their work. They are now extensively used in the largest gas-works of London and the chief cities of Europe, **nearly one hundred being in use,** and their perfect efficiency and profit to a gas company have been fully established with every variety of coal used in Europe. References can be given to the largest gas-works in Europe.

By their use the department of purification from ammonia upon a gas-works is made complete, without the aid of prepared oxide of iron, chemicals in purifiers, or any other supplementary process, and the whole ammoniacal residual product contained in the coal is absorbed and obtained in the form most profitable to a gas company, while the requirements of all Acts of Parliament and of the Board of Trade, relating to incorporate gas companies, are satisfied.

Foul Gas, properly condensed, entering the inlet is, by once only passing through the Scrubber, completely purified from ammonia with regular certainty day by day, without any further trouble, or any other process, effected by a very small quantity of clear water let into the machinery room at the top of the Scrubber, which is discharged at the liquor outlet at the bottom, from Newcastle coal at about 18 to 20 ounces strength, from Yorkshire and other coals generally from 25 to 30 ounces strength; while acidulated litmus or turmeric exposed at the Scrubber outlet will not show the slightest discoloration, and there is not a quarter of a grain of ammonia per 100 feet left unabsorbed.

Applications relating to dimensions and prices should be addressed to us, C. AND W. WALKER, 8, FINSBURY CIRCUS, LONDON, E.C., or to Mr. WILLIAM MANN, late Superintendent of the Chartered Gas-Works, BLACKFRIARS, LONDON; they should state approximately the largest make of gas in 24 hours on a winter's day, and the smallest make on a summer's day, to be purified.

THE St. Day Fire-Brick and China Clay Company, Limited, having largely increased their works, are now prepared to TENDER in any quantity for the supply of their well-known BRICKS and other FIRE GOODS, either for the Home trade or exportation. Prices and samples will be forwarded on application to the works, St. Day, CORNWALL, or the London Offices, 7, St. Bene't Place, GRACECHURCH STREET.

ANTHRACENE REFINERY TO BE SOLD.

THIS Valuable Freehold Property, well situated, capable of refining from two to three tons of crude Anthracene daily, and provided with a special plant for the manufacture of Anthraquinone by a new and economical process, is TO BE DISPOSED OF, on account of the ill-health of the proprietor.

Experienced chemists have been engaged for several years in profitably working the concern, and will, if desired, continue their services to the purchaser, imparting to him the important secrets connected with the various processes of manufacture.

The undoubted connexion and the profitable nature of the business will be proved to the satisfaction of the purchaser.

Apply for further particulars to Messrs. DOMEIER & Co., 3, Botolph Lane, LONDON, E.C.

WIDNES GAS-WORKS.

THE Gas-Works Committee of the Widnes Local Board are prepared to receive TENDERS for the purchase of the surplus TAR and AMMONIACAL LIQUOR to be produced at their works, Widnes, for a period of One year, from the 1st of October next. The Tar and Liquor will be delivered on rails at Widnes.

Forms of tender may be obtained upon application to the undersigned.

Tenders to be addressed to the Chairman of the Gas-Works Committee, endorsed "Tender for Tar" or "Liquor," as the case may be, and delivered at the Public Offices, Widnes, not later than 10 a.m. upon the 6th of September.

Tenders other than on the prescribed form will not be received, and the Board do not bind themselves to accept the highest or any tender.

HENRY ROBERTS.

Widnes, Aug. 25, 1875.

WIDNES WATER-WORKS.

THE Widnes Local Board are prepared to receive TENDERS for the supply of about 3000 tons of good Burgy, Screened Nuts, or Round COAL, for steam purposes, to be delivered in One year at the Ditton Junction or Huyton Station, L. & N. W. Railway, or the Hough Green Station, Cheshire Lines Company. The deliveries to commence upon the 1st of October next, and in such quantities and at such times as the Manager may require.

The weight must be 2240 lbs. to the ton, weighed at the Water-Works, Ditton, or any other of the Board's stations or machines.

Tenders to be addressed to the Chairman of the Gas and Water Committee, endorsed "Tenders for Fuel," and delivered at the Public Offices, Widnes, before 10 a.m., upon the 6th of September.

The Board do not bind themselves to accept the lowest or any tender.

HENRY ROBERTS.

Public Offices, Widnes, Aug. 25, 1875.

WOLSTON'S TORBAY IRON PAINTS.

THE Torbay and Dart Paint Company, Limited, 23, Great George Street, Westminster, S.W., having been informed that PAINTS not manufactured by them are being offered to Gas Companies and the public as "WOLSTON'S," hereby give notice that they will TAKE PROCEEDINGS against any persons infringing their rights as sole proprietors and manufacturers of Wolston's Torbay Iron Paints.

(See Advertisement on another page.

Just published, price 10s. 6d.,

REGISTRATION OF DISTRIBUTORY PLANT.

The forms for this purpose are to illustrate the Paper on Distribution of Gas, read at the Edinburgh Meeting of the British Association of Gas Managers. By the use of the synopsis the whole of the out-door plant may at once be seen, with all matters pertaining to the same.

W. J. WARNER, Engineer.

South Shields.

T. NEWBIGGING,

CONSULTING GAS ENGINEER,

ECCLES, MANCHESTER.

D. A. GRAHAM,

CONSULTING GAS ENGINEER,

STALYBRIDGE, NEAR MANCHESTER,

Erects Horizontal Condensers, Retort Settings, Pumps, Self-Acting Exhauster Governors, Coal-Testing Apparatus, &c., &c.

Gas-Works surveyed, mapped, and reported on, and extensions or alterations designed and the particulars specified, and work estimated for and executed.

D. M. NELSON,

48, GORDON STREET (late 135, BUCHANAN ST.),

GLASGOW,

Supplies every requisite in connexion with the distribution of Gas and Water.

Estimates and prices on application.

WOOD GRIDS for Purifiers and Scrubbers.

Cast-Iron PIPES and VALVES.

Street LAMP-PILLARS.

Patent Pipe SCREWING-MACHINES, &c.

Mr. ALFRED LASS,

60, CORNHILL, LONDON, E.C.,

Is prepared to open the Books, and, if necessary, keep the Accounts of Gas and Water Companies.

To examine the Books and Accounts, and prepare Balance-Sheets for the information of Directors.

To assist Secretaries in preparing Balance-Sheets, according to the "Gas-Works Clauses Act, 1871;" or may be consulted with respect to Accounts generally.

THOMAS ALLAN & SONS, of Springbank Iron-Works, Glasgow, manufacture small cast-iron GAS AND WATER PIPES, 1½ to 6 inches, at their branch works, Stockton-on-Tees, and have at present a large stock, which they are open to sell at moderate prices.

BRAY'S PATENT ENAMEL REGULATOR GAS-BURNERS.

We submit the above Burners to Managers of Gas Companies as being worth a recommendation to their consumers. Though the price is little more than that of common Burners, we believe them to be nearer perfection, for general use, than any others, however costly.

By an increasing number of important gas and railway companies they are used as being the best obtainable for general purposes, and have supplanted enormously costly burners, which give good results in the testing-room, but which fail of their effect when brought to the test of general use.

Dr. W. Wallace, F.R.S.E., F.C.S., Gas Examiner to the City of Glasgow, in a lecture on the "Economical Combustion of Coal Gas," delivered to the Philosophical Society of Glasgow in March, 1874, says: "These are the best Burners obtainable at moderate cost," and, after mentioning several other "good" Burners (which ranged in price up to thirty times the price of ours), he continues, "and their performance is no better than that of Bray's Burners."

Wholesale of their numerous Wholesale Agents and Manufacturers.

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MESSRS. JOHN BETHELL & CO.,

(ESTABLISHED 1836,)

CONTRACTORS for GAS TAR,

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SWAN VILLAGE, WEST BROMWICH.

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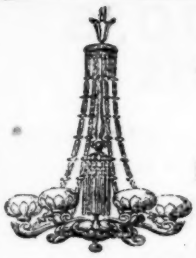

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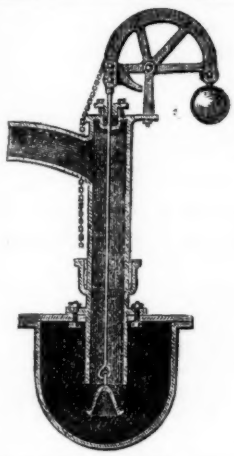

BOX'S

PATENT ANTI-DIP VALVE

Affords a clear gas way through the dip-pipe while the retort is in action, and produces a perfect seal at pleasure, or whenever the retort is open, offering great security against the drawing of air, and obviating the necessity for using any liquid in the now so-called hydraulic main. It is easy of application to existing apparatus, and is comparatively inexpensive. Is not likely to get out of order, as the tar, which will adhere to the botton of the dip-pipe and the flange of the cone, both of which are faced, will act as a lubricant, and prevent undue wear and tear. The whole, as will be seen on inspecting the accompanying illustration, is exceedingly simple, and every part accessible. To adapt it to the present dips, all that is necessary is to face the bottom edge of the dip-pipe, and suspend a cone by a rod, which passes through the bonnet, the raising and lowering of the cone being performed through the intervention of a weighted eccentric.

The Patentee is prepared to supply Patented Apparatus upon the most moderate terms, and will be happy to reply to any inquiries that may by adddressed as under—

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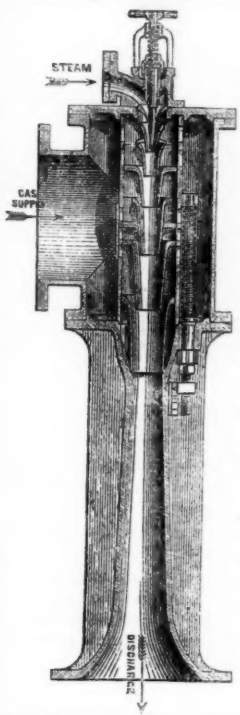
GAS-WORKS, CRAYFORD, KENT



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W. CLELAND'S PATENT STEAM-JET GAS-EXHAUSTER.

E. KÖRTING'S PATENT

STEAM-JET GAS-EXHAUSTER.

Small Cost—Compactness—Perfectly Self-Acting—
Self-Regulating—Self-Cleansing—No Steam-Engine—No Attention—
No Extra Room Required—No Wear and Tear—No Noise—
No Oscillation in Vacuum, or Back Pressure.

UPWARDS OF 150 IN USE IN CONTINENTAL GAS-WORKS.

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Combining small cost and thorough efficiency, with absence of any mechanical means and necessity of renewing the scrubbing material.

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And Every Description of Best Fire-Bricks.

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PREVENTS WASTE OF GAS FROM RETORTS;

SAVES CLAY RETORTS FROM DESTRUCTION BY FIRE;

GREATLY ECONOMIZES THE USE OF FIRE-BRICKS;

And PREVENTS ALL POSSIBLE LOSS of GAS FROM LEAKAGE.

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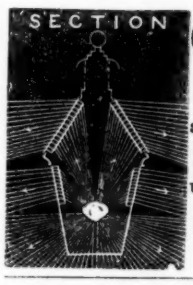


THE PATENT

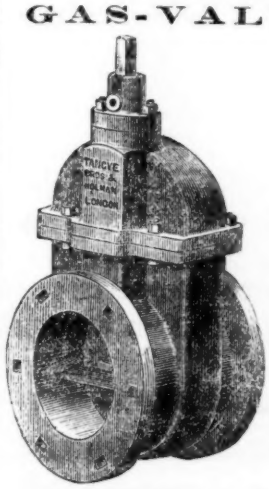
CATOPTRIC LAMP

Is now in use in Moorgate Street, Cheapside, and Trafalgar Square, and has been in successful operation upon Waterloo Bridge since Oct. 7, 1871.

T. A. SKELTON, 37, Essex St., Strand, LONDON, INVENTOR AND PATENTEE.

IMPROVED

GAS-VALVES,



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3	25	0
4	36	0
5	40	0
6	54	0
7	63	0
8	80	0
9	85	0
10	100	0
12	120	0
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WORKS:
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OFFICES:
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SOLE PROPRIETORS AND MANUFACTURERS OF
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TORBAY IRON PAINTS.
(ESTABLISHED 1351.)

W T I P
TRADE MARK

These Paints have been for many years extensively used in Her Majesty's Royal Dockyards, Woolwich Arsenal, the Shorncliffe and Curragh Camps, War Departments, and Colonies, and are largely supplied to Railway, Harbour, and GAS COMPANIES, Shipowners, Engineering Establishments, Railway Carriage and Waggon Works, and the Paint Trade generally. They are the BEST PROTECTORS of IRONWORK, even arresting corrosion after it has set in; and their base being oxide of iron, they are free from those properties which make lead paints so destructive to ironwork. They do not scale or blister, are not affected by great heat, and are the only Paints which will resist the effects of sulphuretted hydrogen. Their DURABILITY and covering properties have borne the test of A QUARTER OF A CENTURY'S PRACTICAL TRIAL.

The undermentioned colours—ground in best linseed oil, and requiring only before use to be thinned down in the ordinary way—are kept in stock:—

Torbay Brown.	Torbay Red.
Dart Green.	Slate.
Dart Yellow.	Buff.
Brixham Black.	Torbay Chocolate.
Light Blue.	Cream Colour.
Dart Brown.	Dart Umber.
Imperial Stone.	Light Stone.
Bronze Green.	Salmon Colour.
Navy Green.	Lead.
Carriage Red.	Dark Stone.
Light Lead.	Crystal Palace Blue.
Light Green.	Iron Grey.

All other Colours made to order.
PRICES and TESTIMONIALS on APPLICATION.
(See Notice on another page.)

WATER-MAINS.
COTTERILL'S PATENT STEEL TUBE-DRILLS, for connecting services to water-mains, *under pressure*, without turning off the water. They drill and tap themselves, and are left in the mains. Made of all sizes, from ¾ to 2 inches and upwards. They cost less than the ordinary plan.
Apply to CHARLES FORSTER COTTERILL, Cannock, STAFFORD, Patentee.

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FIRE CLAY & BRICK WORKS,
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Manufacturers of GAS-RETORTS, GLASS-HOUSE FURNACE & BLAST-FURNACE BRICKS LUMPS, TILES, and every description of FIRE-BRICK.
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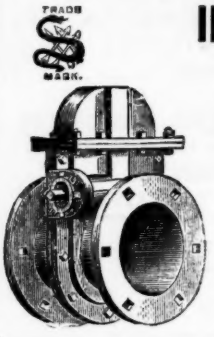
CAST-IRON GAS AND WATER PIPES.

DELIVERY F.O.B. ON CLYDE.
Prices on application.

B. DONKIN & CO.'S
IMPROVED GAS-VALVES
WITH WROUGHT-IRON PINIONS,



List of prices, with full dimensions of all sizes up to 48-inch, to be had on application.
These Valves are all proved on both sides to 30 lbs. on the square inch before leaving the works, and are always kept in stock.
VALVES MADE WITH OUTSIDE RACKS TO ORDER.
ALSO, SCREW WATER-VALVES WITH GUN-METAL FACES.
ALSO SOLE MAKERS OF
J. BEALE'S NEW PATENT GAS EXHAUSTERS.

B. DONKIN & CO.,
GENERAL ENGINEERS AND IRONFOUNDERS,
MAKERS OF STEAM-ENGINES,
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LONDON, S.E.

LIME SUPERSEDED
IN THE
PURIFICATION OF ILLUMINATING GAS
BY
SPENCE'S PATENT DRY COPPERAS.

The only purifying material which removes by one process, without injury to the purifiers, all Ammonia and Sulphuretted Hydrogen. It has been in use for upwards of five years at some of the largest Gas-Works in the Kingdom.

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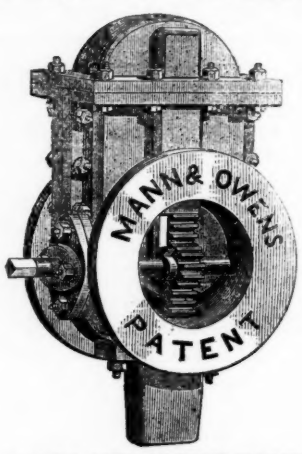
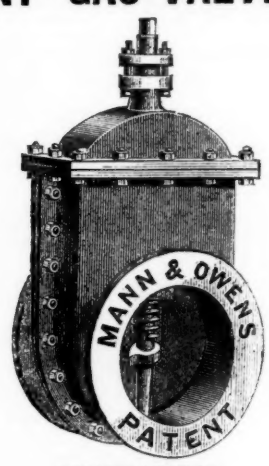
SPENCE'S PATENT GAS DEODORIZER, AND MUDIE'S DISINFECTANT;
MANUFACTURERS OF
SULPHATE OF AMMONIA, VITRIOL, COPPERAS, &c.;
PURCHASERS OF SPENT OXIDE AND AMMONIACAL LIQUOR, AND
CONTRACTORS FOR THE PURIFICATION OF COAL GAS.

MANN & OWENS' PATENT GAS-VALVE.



RACK AND PINION VALVE.



SCREW VALVE.

The advantages of this Patent Valve over all others yet introduced are, that it is always as tight as the best wedge or spring valve, without the possibility of setting fast or becoming suddenly leaky. The surfaces not being in contact during the operation of opening or closing, leakage through wear and tear is avoided.
The Gas Engineer will not fail to see the importance of such a valve in connexion with his purifying apparatus, particularly in the case of large sizes.
The slide being operated either by a screw and nut, or by a pinion and rack, a cam bearing upon a plane, cast on the back of the Valve, forces it against the face, and renders the escape of gas an impossibility. By a slight turn of the pinion or screw, the slide is released, and brought away from the face, by which means friction is avoided, and the only force required to open the Valve is that due to its own weight.

SOLE MANUFACTURERS:
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J. & J. BRADDOCK,

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GLOBE METER-WORKS, OLDHAM,

MANUFACTURERS OF

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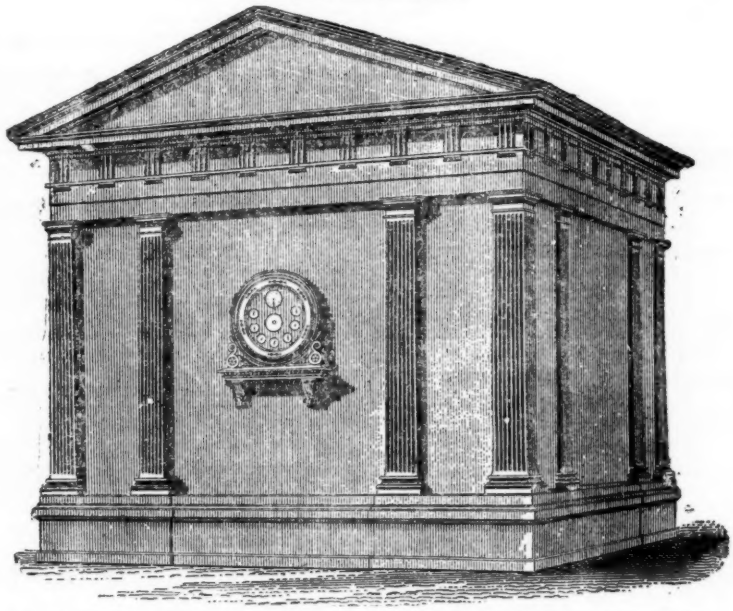
ROUND STATION-METERS,

ON CAST-IRON STANDS.



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GOVERNORS, GAUGES, INDICATORS, MAIN COCKS, &c.

GAS COOKING APPARATUS.

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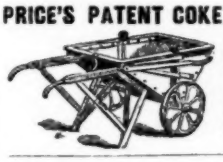

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(COPY.)

	Cubic Feet of Gas per Ton of Coal.	Illuminating Power in Candles.	Coke per Ton of Coal used.	Ash in Coke, per Cent.	Sulphur in Coal, per Cent.
Silkstone Nuts . . .	10·800	15·85	12·66 cwt.....	6·0	0·69

NOTE.—The illuminating power of the gas was tested by the standard burner now used in London by the Gas Referees, under the City of London Gas Act, 1868.

Horseferry Road, Westminster, March, 1870. (Signed) F. J. EVANS.

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Purified gas per ton of coal in cubic feet (average)	10,775
Weight of coke in lbs. per ton of coal	1,465

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1. The following are the practical results given by Dr. Wallace, of Glasgow, of analyses of their Lochore and Capledrae Cannels:—

	Sample worked at Capledrae.	Sample worked at Lochore
Gas per ton of coal, at 60° Fahr. and 30 inches barometric pressure . .	13,095 cubic feet. ..	11,760 cubic feet.
Illuminating power, in standard sperm candles, by union jet consuming 5 cubic feet per hour, at ·5-inch pressure	32·91 ..	34·83
Value of 1 cubic foot of gas in grains of sperm	780 ..	836
Equivalent of a ton of coal in pounds of sperm candles	1,459 ..	1,404
Durability of 1 cubic foot by 5-inch flame	69 minutes. ..	71 minutes.
Gravity of the gas (air = 1000)	596 ..	594

Remarks.—This (the sample from Capledrae) is a Cannel Coal of first-class quality, giving 13,000 feet of 33-candle gas. It contains only a minute proportion of sulphur, and the ash is almost quite white. The coke is of rather inferior quality.

Remarks on Sample from Lochore.—This is a Cannel Coal of first-class quality, giving a large yield of very rich gas and a coke of medium quality.

2. The following are the practical results of analyses by Dr. Wallace of the Company's Waverley Cannels:—

	Capledrae Waverley.	Lochore Waverley.
Gas per ton of coal, at 60° Fahr. and 30 inches barometer	9,120 cubic feet. ..	11,145 cubic feet.
Illuminating power, in standard candles, by union jet consuming 5 cubic feet per hour, at ·5-inch pressure	36·62 ..	33·09
Value of 1 cubic foot of gas in grains of sperm	878 ..	794
Equivalent of a ton of coal in pounds of sperm candles	1,145 ..	1,264
Durability of 1 cubic foot of gas by 5-inch flame	80 minutes. ..	67 minutes.
Gravity of the gas (air = 1000)	677 ..	597

Remarks on the Sample of Capledrae Waverley.—This Coal gives fully 9000 feet of gas of 36½ candles, and is admirably adapted for bringing up the quality of gas made from common coal or inferior qualities of cannel. The tests were made at a rather high temperature, this being one of the coals that stand a very high heat without serious diminution of the illuminating power of the gas The coke contains 60 per cent. of ash, and is therefore almost valueless, but the proportion of sulphur is very moderate.

Remarks on the Lochore Waverley.—This is a first-class Cannel Coal, giving 11,000 cubic feet of 33-candle gas. The quantity of sulphur is very minute, and the ash is nearly white. The coke is of inferior quality, but not wholly valueless.

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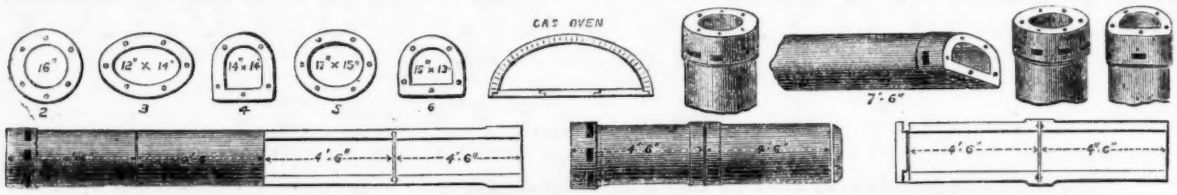

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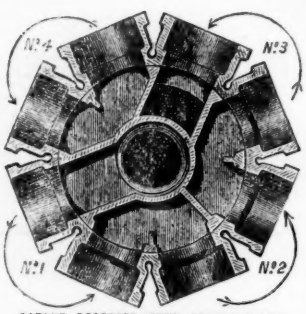

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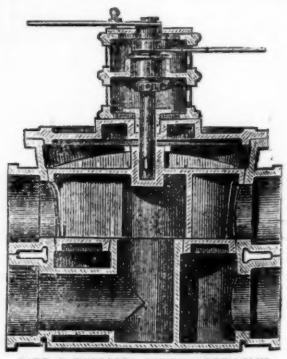

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